

PROJECT MANUAL

GOLDEN GROVE ADULT CORRECTIONAL FACILITY
AND DETENTION CENTER – ROOF REPAIRS
1&1A GOLDEN GROVE, ESTATE GOLDEN GROVE
ST. CROIX, UNITED STATES VIRGIN ISLANDS



NELSON M. PETTY JR., P.E. COMMISSIONER
GOVERNMENT OF THE VIRGIN ISLANDS
DEPARTMENT OF PUBLIC WORKS
8244 SUB BASE
ST. THOMAS, UNITED STATES VIRGIN ISLANDS 00802-5805
FOR

WYNNIE TESTAMARK, DIRECTOR
GOVERNMENT OF THE VIRGIN ISLANDS
BUREAU OF CORRECTIONS
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DIVISION 0 – INVITATION FOR BID REQUIREMENTS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, BUREAU OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER -
ROOF REPAIRS

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

SECTION 1: INVITATION FOR BIDS

[Construction]

GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES
Department of Property and Procurement

To:

Date: _____

IFB No. _____

Pursuant to 31 V.I.C. Sub Section 239(a) and the Rules and Regulations thereunder issued, the Government of the Virgin Islands, Department of Property and Procurement, will receive bids for the work described below. Bids will be received until _____

DESCRIPTION OF WORK AND PROJECT NO.

The Government of the Virgin Islands – Department of Property and Procurement, on behalf of the Bureau of Corrections, is requesting bids for the **GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER-ROOF REPAIRS**, 1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands.

SCOPE OF WORK: The Scope of Work consists of the Repair of roofs and replacing gutters and downspouts at the Golden Grove Adult Correctional Facility and Detention Center, 1&1A Golden Grove, Estate Golden Grove, St. Croix, U. S. Virgin Islands. The Work will include, but is not limited to:

- 1) Pressure washer or high pressure nozzle and water hose to wash the roof and remove existing loose membrane with a non-filming detergent. Use appropriate pressure and take caution not to inject water into substrate. In areas with stubborn dirt, grease or other contaminants, use a stiff bristle brush, or broom to scrub the area clean with additional water and none filming detergent. Treat algae or moss with bleach.
- 2) Inspect area to be coated, including around pipe, equipment, roof edges, equipment roof curbs and walls. Repair all cracks, breaks, splits and holes. Ensure all drains are clean and clear.
- 3) Apply second coat when first is dry, preferably on the same day. Follow all product label instruction before coating.
- 4) Ceiling repairs in the Warden's office and cafeteria.

BID SCHEDULE: The Contract Scope is a Unit Price to include the entire Scope Of Work described in the Contract Documents. The Contractor shall complete the Bid Schedule included in the Contract Documents and submit it with their bid. The Bid Schedule is representative of a breakdown of major scope items. Items shown in the Contract Documents, but not specifically shown in the Bid Schedule are also included in the Contract Cost.

COMPLETION TIME: 120 Calendar Days

LIQUIDATED DAMAGES: \$100 per calendar day

BONDS: Performance Bond: 100% of Contract
Payment Bond: 100% of Contract
Bid Bond: 5% (Required)

SCOPE OF WORK: The Scope Of Work is as defined in the Bid Documents

SUBMISSION OF ALL BIDS: All interested parties shall submit seven (7) sets of their bid.

Preferred Bidder:

Any bidder claiming eligibility as a "preferred bidder" under the provision Preferred Bidder's Act (31 VIC 236a-Act No. 2995, approved April 16, 1971) must request that his name be added to a preferred bidder's list to be maintained by the Commissioner of Property and Procurement.

If a bidder has not previously filed a notarized Certificate with the Commissioner of Property and Procurement, copies thereof may be obtained from the Department of Property and Procurement, Division of Procurement, #3274 Estate Richmond, Christiansted, St. Croix, U.S.V.I. and/or Building No. 1, Sub Base, Third Floor, St. Thomas, U.S.V.I. Certificates must be fully completed, notarized and filed with the Division of Procurement before the day and hour set for the opening.

All documents in connection with the above must be obtained from the Department of Property and Procurement. The same will consist of Invitation For Bids of Construction Contract, Qualification Statement, the Contract, Performance and Payment Bonds, if required, General Provisions, Special Provisions, and Performance Specifications.

GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES
Department of Property and Procurement
Invitation For Bids

(CONSTRUCTION)

Date: _____

IFB No: _____

To: The Commissioner
Department of Property and Procurement
Government of the Virgin Islands

Section 1. The undersigned, _____ in compliance with your Request For Bids, above referenced, for the Construction of the Bureau of Corrections Golden Grove Adult Correctional Facility and Detention Center Roof Repairs, St. Croix, U.S. Virgin Islands hereby offers to perform the above construction work more particularly described in the Contract documents which accompanied the

Bid-for the total sum of \$ _____

Section 2. The undersigned hereby certifies that he has examined or caused to be examined for and on his behalf the plans and specifications together with related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein of which the bid is a part.

Section 3. The undersigned agrees that upon written notice of the acceptance of this offer he will execute a formal contract within ten (10) calendar days and deliver to the Contracting Officer such bonds as are required.

Section 4. (a) The undersigned further agrees that if awarded a contract hereunder, he will within such time as determined by the Contracting Officer before or after the date of commencement of work, prepare and submit to the Contracting Officer for approval a practicable schedule showing the order in which he proposes to carry on the work; the date on which he will start the several salient features including procurement of materials and equipment and the contemplated dates for completing the same.

(b) The schedule shall be in the form of a Progress Chart of suitable scale to indicate appropriately the percentage of work schedule for completion at any time. The Contractor shall enter in the chart the actual progress at the end of each week or at such intervals as directed by the Contracting Officer, and shall immediately deliver to the Contracting Officer three (3) copies thereof.

(c) If, in the opinion of the Contracting Officer, the undersigned contractor falls

behind the progress schedule, the Contractor shall take such steps as may be necessary to improve his progress and the Contracting Officer may, **inter alia**, require him to increase the number of shifts, and/or overtime operations or days of work to submit for approval such supplementary schedule or schedules in chart form as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained **all without additional cost to the Government.**

(d) Failure of the Contractor to comply with the requirements of the Contracting Officer under the provisions hereof shall be grounds for determination by the Contracting Officer that the Contractor is not prosecuting the work with such diligence as will ensure completion within the time specified. Upon such determination, the Contracting Officer may terminate the contractor's right to proceed with the work, or may separable part thereof, in accordance with the delays damages article of the contract.

Section 5. The bid security attached, in the sum of \$_____ shall become the property of the Government, as **liquidated damages**, in the event the contract is not executed or the bonds furnished within the time set forth.

Respectfully submitted:

(Signature)

Seal – if by Corporation

(Official designation)

(Name of Firm)

ACCEPTANCE AND NOTIFICATION
Government of the Virgin Islands

The above offer is hereby accepted and Offeror is hereby so notified.

Dated: _____

Anthony D. Thomas
Commissioner
Department of Property and Procurement
Contracting Officer, G.V.I.

SECTION 2 – SCHEDULE OF PRICES

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, BUREAU OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER - ROOF REPAIRS

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

	DESCRIPTION	UNIT	QUANTITIY	UNIT PRICE	EXTENSION	TOTAL LABOR	TOTAL MATERIAL
1.	Purchase and installation of down spouts for A/B, C/D, G/H units 6"x5"	LF	864				
2.	Women's Dorm roof sloped concrete power wash and elastomeric coating	SF	3490				
3.	G/H Unit roof sloped concrete power wash and elastomeric coating	SF	12,860				
4.	A/B Unit roof sloped concrete power wash and elastomeric coating	SF	12,860				
5.	C/D Unit roof sloped roof power wash and elastomeric coating	SF	12,860				
6.	R/D Classification/ Administration roof – sloped concrete (remove dead conduits) power wash and elastomeric coating	SF	6,600				
7.	64 Educational Learning Center roof – sloped concrete (remove dead conduits) power wash and elastomeric coating	SF	6,000				
8.	Vocational Shop roof – galvanized over tecum power wash and Enduris 3500 elastomeric coating	SF	8,750				
9.	Kitchen/Laundry/Maintenance roof – repair galvanized over wood, power wash and Enduris 3500 elastomeric coating	SF	12,570				
10.	Kitchen replace metal roof (galvanized roof)	SF	1,780				

SECTION 2 – SCHEDULE OF PRICES

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, BUREAU OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER - ROOF REPAIRS

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION	TOTAL LABOR	TOTAL MATERIAL
11.	Medical Building roof – concrete (remove conduits) power wash and elastomeric coating	SF	8,610				
12.	Warden Administrative building roof and patch ceiling in warden's office – Sloped concrete (Remove conduits) power wash and elastomeric coating	SF	9,400				
13.	Flat entrance roof ACF 106'x6'=648 34'x6'=204 21'x6'=126 (galvanized over wood) power wash and Enduris 3500 elastomeric coating	SF	980				
14.	East Tower – metal roof, wood fascia – Repair and paint damaged fascia; power wash and Enduris 3500 elastomeric coating	SF	380				
15.	West Tower – Metal roof, wood fascia -Repair and paint damaged fascia; power wash and Enduris 3500 elastomeric coating	SF	380				
16.	Central Tower – Concrete roof Repair and paint damaged fascia; power wash and elastomeric coating	SF	230				
17.	Carpentry Shop Check Point walk way (galvanized roof over wood) Repair and paint damaged fascia; power wash and Enduris 3500 elastomeric coating	SF	560				
18.	Maintenance Shop store room roof (galvanized roof) power wash and Enduris 3500 elastomeric coating	SF	650				
19.	Chapel – Sloped concrete (Remove conduits) power wash and elastomeric coating	SF	3,350				

Section 2: Schedule of Prices

SECTION 2 – SCHEDULE OF PRICES
GOVERNMENT OF THE U. S. VIRGIN ISLANDS, BUREAU OF CORRECTIONS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER - ROOF REPAIRS
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION	TOTAL LABOR	TOTAL MATERIAL
20.	Perform adhesion tests on at least 2 areas of each roof	LS	1				
21.	Cafeteria ceiling – Repair 1 fan. Reinstall one vent window in clear story	LS	1				
22.	Cafeteria ceiling – remove blistering paint to an angled joint and repaint with matching material.	LS	1				
23.	Kitchen – Replace exhaust fan	EA	2				
24.	Kitchen – Replace Hatch-type heat and smoke vent	EA	1				
25.	Mobilization & General Conditions	LS	1				

TOTAL BID _____

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SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

CONSTRUCTION CONTRACT

THIS AGREEMENT is made this ____ day of _____, 20__, in the Territory of the Virgin Islands, by and between the Government of the Virgin Islands, Department of Property & Procurement (hereinafter referred to as “Government”) and **[Insert Contractor’s Name or Company Name]** (hereinafter referred to as “Contractor”).

WITNESSETH:

WHEREAS, the Government is in need of a contractor to furnish all labor, materials and equipment necessary for the **Construction of the Bureau of Corrections Golden Grove Adult Correctional Facility and Detention Center Roof Repairs, St. Croix, U. S. Virgin Islands** in strict accordance with the plans and specifications (incorporated by reference and made a part of this contract), which duties and responsibilities are more particularly described in **Addendum I**, (Scope of Work), **Addendum II** (General Provisions and Warranties together with the additional General Provisions – Construction), **Addendum III** (Termination of Contracts), and **Addendum IV** (Compensation) attached hereto; and

WHEREAS, the Contractor represents that it is willing and capable of providing such services;

NOW THEREFORE, in consideration of the mutual covenants herein contained, and intending to be legally bound by this written instrument, the parties hereto do covenant and agree as follows:

C0 ()
IFB0 (C)

Contractor’s Initials _____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

1. SERVICES

The Contractor will provide the services described more particularly in Addendum I (Scope of Work) incorporated herein by reference and made a part of this construction contract.

2. TERM

This Contract shall commence upon execution by the Governor and shall terminate within **One Hundred Twenty** (120) calendar days thereafter, or in accordance with an agreed upon extension pursuant to the General Provisions. Particular reference should be made to the Notice to Proceed.

3. COMPENSATION

The Government, in consideration of satisfactory performance of the services described in Addendum I, agrees to pay the Contractor the sum of **[insert contract price in words (contract price in numbers)]** in accordance with the provisions set forth in Addendum IV (Compensation), attached hereto is hereby incorporated by reference and made a part of this contract.

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

4. LIQUIDATED DAMAGES

It is hereby expressly agreed by the parties hereto that in the event the Contractor has not completed the scope of work under the term set forth in Paragraph 2 hereof, **One Hundred and 00/100 Dollars (\$100.00)** for each calendar day or portion thereof shall be due the Government. The liquidated damages shall first be deducted from any contract monies due, but not yet paid to the extent available.

5. RECORDS

The Contractor will present documented, precise records of time and/or money expended under this Contract.

6. PROFESSIONAL STANDARDS

The Contractor agrees to maintain the professional standards applicable to its profession and to Contractors doing business in the United States Virgin Islands.

7. DOCUMENTS, PRINTOUTS, ETC.

Certified copies of all documents, books, records, instructional materials, programs, printouts and memoranda of every description derived therefrom and pertaining to this Contract shall become the property of the Government and shall be turned over to it at the

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IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

termination of this Contract, or at the Government's request, during the life of the contract.

The above-described materials shall not be used by Contractor or by any other person or entity except upon the written permission of the Government.

8. LIABILITY OF OTHERS

Nothing in this Contract shall be construed to impose any liability upon Government to persons, firms, associations, or corporations engaged by Contractor as servants, agents, independent contractors, or in any other capacity whatsoever, or make the Government liable to any such persons, firms, associations or corporations for the acts, omissions, responsibilities, obligations and taxes of Contractor or whatsoever nature, including but not limited to unemployment insurance and social security taxes for Contractor, its servants, agents or independent contractors.

9. ASSIGNMENT

The Contractor shall not subcontract or assign any part of the services under this contract without the prior written approval of the Government.

10. INDEMNIFICATION

Contractor agrees to indemnify, defend, and hold harmless the Government from and against any and all loss, damage, liability, claims, demands, detriments, cost, charges and

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IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

expenses (including attorney's fees) and causes of action of whatsoever character which the Government may incur, sustain or be subjected to, arising out of or in any way connected to the services to be performed by Contractor under this Contract and arising from any cause, except the sole negligence of Government.

11. INDEPENDENT CONTRACTOR

The Contractor shall perform this Contract as an independent contractor and nothing herein contained shall be construed to be inconsistent with this relationship or status.

12. GOVERNING LAW

This Contract shall be governed by the laws of the United States Virgin Islands and jurisdiction and venue are exclusive in the United States Virgin Islands.

13. WAIVERS AND AMENDMENTS

No waiver, modification, or amendment of any term, condition or provision of this Contract shall be valid or of any force or effect unless made in writing, signed by the parties hereto or their duly authorized representatives, and specifying with particularity the nature and extent of such waiver, modification, or amendment. Any such waiver, modification, or amendment in any instances shall in no event be construed to be a general waiver, modification, or amendment of any of the terms, conditions, or provisions of this Contract,

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IFB0 (C)

Contractor's Initials _____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

but the same shall be strictly limited and restricted to the extent and occasion specified in such signed writing or writings.

14. ENTIRE AGREEMENT

This agreement constitutes the entire agreement of the parties relating to the subject matter addressed in this agreement. This agreement supersedes all prior communications, contracts, or agreements between the parties with respect to the subject matter addressed in this Agreement, whether written or oral.

15. RIGHT TO WITHHOLD

If work under this Contract is not performed in accordance with the terms, hereof, Government will have the right to withhold out of any payment due to Contractor, such sums as the Government may deem ample to protect it against loss or to assure payment of claims arising therefrom, and, at its option, the Government may apply such sums in such manner as the Government may deem proper to secure itself or to satisfy such claims. The Government will immediately notify the Contractor in writing in the event that it elects to exercise its right to withhold.

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IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

16. CONDITION PRECEDENT

This Contract shall be subject to the availability and appropriation of funds and to the approval of the Governor.

17. TERMINATION

Either Party will have the right to terminate this contract with cause on ten (10) days written notice to the other party specifying the date of termination. The attached “Addendum III- Termination of Contracts for the Convenience of the Government” is hereby fully incorporated herein by reference and is made a part of this agreement.

18. PARTIAL TERMINATION

The performance of work under this contract may be terminated by the Government in part, whenever the Government shall deem such termination advisable. This partial termination shall be effected by delivering to the Contractor a Notice of Partial Termination specifying the extent to which the term and/or duties under this contract are terminated and the date upon which such termination becomes effective. The Contractor shall be entitled to receive payment for services provided to the date of termination, including payment for the period of the ten (10) days’ notice.

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IFB0 (C)

Contractor’s Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

19. NON-DISCRIMINATION

No person shall be excluded from participating in, be denied the proceeds of, or be subject to discrimination in the performance of this Contract on account of race, creed, color, sex, religion, disability or national origin.

20. CONFLICT OF INTEREST

(a) Contractor covenants that it has no interest and will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to perform under this Contract.

(b) Contractor further covenants that it is:

(1) not a territorial officer or employee (i.e., the Governor, Lieutenant Governor, member of the Legislature or any other elected territorial official; or an officer or employee of the legislative, executive, or judicial branch of the Government or any agency, board, commission, or independent instrumentality of the Government, whether compensated on a salary, fee or contractual basis); or

(2) a territorial officer or employee and, as such, has:

(i) familiarized itself with the provisions of Title 3, Chapter 37, Virgin Islands Code, pertaining to conflicts of interest, including the penalties provisions set forth in section 1108 thereof;

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

(ii) not made, negotiated or influenced this contract, in its official capacity;

(iii) no financial interest in the contract as that term is defined in section 1101, (1) of said Code chapter.

21. EFFECTIVE DATE

The effective date of this Contract is upon the execution by the Governor.

22. NOTICE

Any notice required to be given by the terms of this Contract shall be deemed to have been given when the same is sent by certified mail, postage prepaid or personally delivered, addressed to the parties as follows:

GOVERNMENT

Anthony D. Thomas

Commissioner

Department of Property and Procurement

#3274 Estate Richmond

Christiansted, VI 00820-4241

CONTRACTOR

Contractor's Name

Contractor's Title

Contractor's Name or Company Name

Contractor's P. O. Box

Contractor's City, State, Zip Code

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IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

23. LICENSURE

The Contractor covenants that it has:

- a. obtained all of the applicable licenses or permits, temporary or otherwise, as required by Title 27 of the Virgin Islands Code; and
- b. familiarized itself with the applicable provisions of Title 27 of the Virgin Islands Code pertaining to professions and occupations.

24. CONTRACTOR'S REPRESENTATIONS

The Contractor agrees that he is fully informed regarding all the conditions affecting the work to be done and labor and materials to be furnished for the completion of the Contract, and that he has been engaged in and now does such work and represents that he is fully equipped, competent, and capable of performing the work and is ready and willing to perform such work.

The Contractor agrees further to begin work not later than the date indicated on the formal notice to proceed and complete the work within the number of days specified in the proposal or as extended in accordance with the General Provisions of the Contract.

The Work shall be done under the direct supervision of the Government, and in accordance with the laws of the Government and its Rules and Regulations thereunder issued and any and all applicable federal rules and regulations. The parties hereto agree that this

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Contractor's Initials _____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

contract shall, in all instances, be governed by the Laws of the Government of the Virgin Islands.

25. WARRANTY OF NON-SOLICITATION

The Contractor expressly warrants that he has employed no person to solicit or obtain this contract on his behalf, or to cause or procure the same to be obtained upon compensation in any way, contingent, in whole or in part, upon such procurement, and that he has not paid, or promised or agreed to pay to any person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission, or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him included any sum by reason of such brokerage, commission or percentage; and that all monies payable to him hereunder are free from obligation to any other person for services rendered, or supposed to have been rendered, in the procurement of this contract.

Breach of the warranty shall give the Government the right to terminate this Contract, or in its discretion, to deduct from the contract price or consideration the amount of such commission, percentage, brokerage or contingent fees.

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IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

26. FALSE CLAIMS

Contractor warrants that it shall not, with respect to this Contract, make or present any claim upon or against the Government of the Virgin Islands, or any officer, department, board, commission, or other agency thereof, knowing such claim to be false, fictitious or fraudulent. Contractor acknowledges that making such a false, fictitious, or fraudulent claim is an offense under Virgin Islands law.

27. DEBARMENT CLAUSE

By execution of this contract, the Contractor certifies that it is eligible to receive contract awards using federally appropriated funds and that it has not been suspended or debarred from entering into contracts with any federal agency. The Contractor shall include this provision in each of its subcontracts hereunder and shall furnish its subcontractors with the current “LIST OF PARTIES EXCLUDED FROM FEDERAL PROCUREMENT OR NON PROCUREMENT.” In the event the Contractor or any subcontractor misrepresents its eligibility to receive contract awards using federal funds, the Contractor or subcontractor agrees that it shall not be entitled to payment for any work performed under this contract or any subcontract and that the Contractor or subcontractor shall promptly reimburse the Government of the Virgin Islands for any progress payments heretofore made.

C0 ()
IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

28. NOTICE OF FEDERAL FUNDING

Contractor acknowledges that this Contract is funded, in whole or in part, by federal funds. Contractor warrants that it shall not, with respect to this Contract, make or present any claim knowing such claim to be false, fictitious, or fraudulent. Contractor acknowledges that making such a false, fictitious, or fraudulent claim is a federal offense.

29. Davis Bacon Act

Contractor hereby agrees that it shall comply with all rulings and interpretations of the Davis-Bacon Act (40 USC 276a-5) and that the contractor and subcontractor agrees that all employees shall be paid the local prevailing wages as established by Virgin Islands statutes and laws.

30. Certification of Employment

Contractor hereby agrees that pursuant to 31 V.I.C 236(h) it will hire at least two individuals from the Welfare to Work program administered by the Labor and Human Services Departments. (Only insert if Contract compensation is over \$500,000)

C0 ()
IFB0 (C)

Contractor's Initials_____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

31. OTHER PROVISIONS

Addendum II (General Provisions and Warranties) and Addendum III (Termination of Contracts) attached hereto are hereby incorporated by reference and made a part of this contract.

IN WITNESS WHEREOF, the parties have hereunto set their hands on the day and year first above written.

WITNESSES: GOVERNMENT OF THE VIRGIN ISLANDS

Anthony D. Thomas
Commissioner

Department of Property and Procurement

Date: _____

CONTRACTOR

Contractor's Name, Title
Contractor's Company Name

Date: _____

(Corporate seal, if Contractor is a corporation)

APPROVED:

Albert Bryan

Date: _____

GOVERNOR OF THE VIRGIN ISLANDS

APPROVED AS TO LEGAL SUFFICIENCY
AT THE DEPARTMENT OF JUSTICE BY: _____

Date _____

C0 ()
IFB0 (C)

Contractor's Initials _____

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

CERTIFICATE OF APPROVAL

I hereby certify that this is a true and exact copy of Contract No. (**Insert Construction Contract Number**) entered into between the Department of Property and Procurement, on behalf of the **Bureau of Corrections and Contractor's Name/Company Name**

Anthony D. Thomas., Commissioner
Department of Property and Procurement

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

Addendum I (include each addenda on a separate sheet of paper)

Scope of Work

Addendum II

General Provisions and Warranties

Additional General Provisions - Construction

Addendum III

Termination of Contracts

SECTION 3 – CONSTRUCTION CONTRACT

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

Addendum IV *Compensation*

The Government, in consideration of the satisfactory performance of the services described in Addendum I (Scope of Work), agrees to make progress payments based on the Schedule of Values and invoices submitted by the Contractor **[Insert Contractor's Name or Company Name]** in accordance with Clause 7 (Payments to Contractor) of the General Provisions.

The parties agree that the sum to be paid under this contract is **[Insert Contract price in words] [(Insert Contract price in numbers)]**. The parties further agree that payments will be made in accordance with services rendered.

The final payment is subject to the inspection and acceptance of the project by the Government, the submission of all pertinent warranties, and the Release of Claims. Contractor shall submit a Waiver of Liens or Affidavits of subcontractors who have released the contractor of its obligations. Contractor shall also submit Consent of Surety before final payment and, upon the Government's request, any other documentation the Government deems necessary.

C0 ()
IFB0 (C)

Contractor's Initials_____

SECTION 01000 - SUMMARY

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 GENERAL

1.01 PROJECT

A. Project Name:

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

B. Owner's Name:

VIRGIN ISLANDS GOVERNMENT. BUREAU OF CORRECTIONS

C. Plan Designer's Name:

DEPARTMENT OF PUBLIC WORKS

D. The complete Project consists of the repair of roofs and replacing gutters and downspouts at the Golden Grove Adult Correctional Facility and Detention Center. This Phase of construction shall include:

1) Pressure washer or high pressure nozzle and water hose to wash the roof with a non-filming detergent. Use appropriate pressure and take caution not to inject water into substrate. In areas with stubborn dirt, grease or other contaminants, use a stiff bristle brush, or broom to scrub the area clean with additional water and none filming detergent. Treat algae or moss with bleach.

2) Inspect area to be coated, including around pipe, equipment, roof edges, equipment roof curbs and walls. Repair all cracks, breaks, splits and holes. Ensure all drains are clean and clear.

3) Apply second coat when first is dry, preferably on the same day. Follow all product label instruction before coating.

1.03 SALVAGE BY CONTRACTOR

A. Contractor shall remove and store the following, for later reinstallation by Contractor, prior to start of work:

1. N. A.

1.04 WORK BY OTHERS

A. N. A.

1.05 OWNER FURNISHED PRODUCTS

A. Products furnished by Owner include the following categories:

1. OFCI:

Owner furnished Contractor installed.

2. OFCR:

Owner furnished Contractor rough-in:

3. OFOI:

Owner furnished Owner Installed.

SECTION 01000 - SUMMARY

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

B. Owner Responsibilities for products in the following category:

OFCI

1. Arrange installation inspections required by regulatory agencies having jurisdiction.

C. Contractor's Responsibilities (for all categories unless otherwise noted): OFCR;

1. Coordinate installation of Owner furnished products with other portions of the Work.
2. Designate submittal and delivery date for each product affecting construction schedule.
3. Review submittals of Owner furnished products and verify rough-in requirements prior to installation for products in the following categories:

a. OFCI

b. OFCR

Notify Owner's Representative of discrepancies that would affect installation and rough-ins.

4. Promptly inspect products jointly with the Owner, record shortages, damaged or defective products listed in the following categories:

a. OFCI

5. Protect products from damage after installation.

6. Assemble, install connect, adjust, test and calibrate, and finish products listed in the following category:

a. OFCI.

7. Provide mechanical, plumbing and electrical connections to Contractor installed products including installation of service fixtures for products listed in the following categories:

a. OFCR

b. OFCI.

8. Afford Owner's forces a reasonable opportunity for delivery and storage of their products and the execution of their work. Where required, Construction Manager shall properly connect his work to that installed by the Owner's forces.

9. Repair or replace items damaged by Construction Manager.

10. Receive and unload products at the site for products listed in the following categories:

a. OFCI

b. OFCR.

SECTION 01000 - SUMMARY

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

11. Handle products at the site, including uncrating and storage for products listed in the following categories:

- a. OFCI
- b. OFCR.

1.06 CONTRACTOR FURNISHED PRODUCTS

A. Products furnished by Contractor consist of products listed in the following category:

- 1. CFCI.

B. Contractor's responsibilities:

- 1. As indicated in the Construction Documents.

1.07 OWNER OCCUPANCY

A. Owner intends to occupy the Project by the date stated in the Agreement as the contract completion date.

B. Cooperate with Adjacent Property Owners to minimize conflict and to facilitate the adjacent Land Owner's operations with the least amount of inconvenience.

C. Contractor shall take precautions to avoid excessive noise or vibration that would disturb Adjacent Property owners' operations. When directed by Owner, Contractor shall perform certain operations at designated time of day or night in order to minimize disturbance to Owner's operations.

D. Schedule the Work to accommodate Owner occupancy.

1.08 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations are limited to areas permitted by Law, Ordinances, Permits and Contract Documents.

B. Arrange use of site and premises to allow:

- 1. Owner occupancy and operation.
- 2. Use of adjacent sites by the public.

C. Do not unreasonably encumber site or premises with materials or equipment.

D. Limit use of site and premises for Work and storage as follows:

- 1. Maintain Owner and public access to existing building, parking, drives and walks at all times.
- 2. Restrict work and storage to construction areas indicated on Drawings.
- 3. Existing building and parking areas may not be used for storage.
- 4. Access site only as indicated on the Drawings.

SECTION 01000 - SUMMARY

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

5. Restrict parking to areas designated by the Owner.
 6. Do not perform operations that would disrupt or delay Owner's daily operations.
 7. Restrict construction personnel from access to other areas of the site and existing building, except as required to perform new and alterations work.
- E. Assume full responsibility for protection and safekeeping of products stored on premises.
- F. Relocate stored products which interfere with operations of Owner.
- G. Do not load structure with weight that will endanger structure.
- H. Emergency Building/Site Exits during Construction:
1. Keep all existing site exits open during construction period.
 2. Provide barricade and signage in accordance with all requirements of the local building authorities during construction.
- I. Utility Outages and Shutdown:
To be scheduled with the Owner's representative prior to implementing.

1.09 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.

1.10 BID SCHEDULE

- A. The Contract Scope is a Unit Price Cost to include the entire Scope Of Work described in the Contract Documents. The Contractor shall complete the Bid Schedule included in the Contract Documents and submit it with their bid. The Bid Schedule is representative of a breakdown of major scope items. Items shown in the Contract Documents, but not specifically shown in the Bid Schedule are also included in the Contract Cost.

PART 2 PRODUCTS- NOT USED

PART 3 EXECUTION- NOT USED

END OF SECTION

SECTION 01039-COORDINATION AND MEETINGS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meeting.
- F. Pre-installation meetings.
- G. Equipment electrical characteristics and components.
- H. Examination.
- I. Preparation.
- J. Cutting and Patching.
- K. Alteration project procedures.

1.2 RELATED SECTIONS (NOT USED)

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Specifications to ensure an efficient and orderly sequence of construction elements.
- B. Verify all existing utility locations.

1.4 FIELD ENGINEERING

- A. Contractor shall locate and protect all survey control and reference points, and shall accurately replace and have verified by the Engineer any such point, which is damaged or moved, at his own expense.
- B. Control datum for survey is as that shown on Drawings. The survey shall establish certain reference points and benchmarks in the immediate vicinity of the work areas. The Contractor shall lay out all additional lines and grades and otherwise do all layout and measurements necessary for the proper completion of the work.
- C. Verify setbacks and easements; confirm drawings dimensions and elevations.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- E. The Contractor shall furnish assistance to the Engineer as requested to check the layout or otherwise control the work. Such assistance shall be understood to include the provision of suitable manpower to assist the Engineer in taping measurements, holding a survey rod for checking grades and the like.

SECTION 01039-COORDINATION AND MEETINGS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

F. The Engineer reserves the right to inspect or check any of this work, and the Contractor shall not claim added compensation for any delay occasioned by required as a result of the Engineer's inspections.

1.5 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required: Owner, Owner's Construction Representative, Designer, and Contractor.

C. Agenda:

1. Submission of list of testing agency and other parties providing services on the project.
2. Procedures and processing of field decisions, submittals, and substitutions, applications for payments, pricing request request, Change Orders, and Contract closeout procedures.
3. Procedures for layout of the project, establishing controls, limits of right-of-way and easements.
4. Scheduling.

D. Owner will record minutes and distribute copies to participants and those affected by decisions made.

1.6 SITE MOBILIZATION MEETING

A. Owner may schedule a meeting at the project site prior to construction start-up.

B. Attendance Required:

Owner's Representative/Engineer, Contractor's Superintendent, and major Subcontractors.

C. Agenda:

1. Use of the site by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities provided by Contractor.
4. Temporary utilities provided by Contractor.
5. Security and housekeeping procedures.
6. Schedules.
7. Application for payment procedures.
8. Procedures for testing.
9. Procedures for maintaining record documents.

D. Owner's Representative will record minutes and distribute copies to participants and those affected by decisions made.

SECTION 01039-COORDINATION AND MEETINGS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

1.7 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout the progress of the Work at weekly intervals or intervals agreed to by Owner and Contractor.
- B. Owner will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required:
Job superintendent, major Subcontractors and suppliers, Owner, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems which impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedule.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
- E. Owner's Representative will record minutes and distribute copies to participants and those affected by decisions made.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01045-CUTTING AND PATCHING

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division- 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.

1.3 SUBMITTALS

A. Cutting and Patching Proposal:

Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required and how it is to be performed indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching is to be performed.
5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
7. Approval by the Owner/Owner's Representative to proceed with cutting and patching does not waive the Owner/Owner's Representative's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work:

Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Structural steel
 - b. Timber and primary wood framing

SECTION 01045-CUTTING AND PATCHING

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

c. Miscellaneous structural metals

D. Operational and Safety Limitations:

Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

- a. Water, moisture, or vapor barriers.
- b. Membranes and flashings.

C. Visual Requirements:

Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Owner's Representative's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

A. Temporary Support:

Provide temporary support of Work to be cut.

B. Protection:

Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

SECTION 01045-CUTTING AND PATCHING

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General:

Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting:

Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

C. Patching:

Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01095 – REFERENCE STANDARDS AND DEFINITIONS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General:

Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated:

The term indicated refers to graphic representations, notes, or schedules on Drawings, or other Paragraphs of Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed:

Terms such as directed, requested, authorized, selected, approved, required and permitted mean directed by the Owner's Representative, requested by the Owner's Representative, and similar phrases.

D. Approved:

The term approved, when used in conjunction with the Owner's Representative's action on the Contractor's submittals, applications, and requests, is limited to the Owner's Representative's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations:

The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish:

The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install:

The term describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, and finishing, curing, protecting, cleaning, and similar operations.

H. Provide:

The term provide means to furnish and install, complete and ready for the intended use.

I. Installer:

An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

J. Trades:

Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter.

SECTION 01095 – REFERENCE STANDARDS AND DEFINITIONS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

K. Project site:

The space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

L. Testing Agencies:

A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, or to reports on and, if required, to interpret results of those inspections or tests.

M. Owner's Representative:

Agent authorized to act on behalf of the Owner.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format:

These Specifications are organized into Divisions and Sections based on the Construction Specification Institute's 16 - Division Format and MASTER FORMAT numbering system.

B. Specification Content:

This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language:

Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicate.

2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subject language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by other means when so noted.

a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards:

Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates:

Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements:

SECTION 01095 – REFERENCE STANDARDS AND DEFINITIONS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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Where compliance with two or more standard is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Owner's Representative for a decision before proceeding.

1. Minimum Quantity or Quality Levels:

The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Owner's Representative for a decision before proceeding.

D. Copies of Standards:

Each entity engaged in construction on the project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names:

Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.5 SUBMITTALS

A. Permits, Licenses, and Certificates:

For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2- PRODUCTS (NOT APPLICABLE)

PART 3- EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01200 – PRICE AND PAYMENT PROCEDURES

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.2 RELATED SECTIONS: N/A

1.3 SCHEDULE OF VALUES

- A. Submit a printed schedule on AIA Form G703 -Application and Certificate for Payment Continuation Sheet.
- B. Revise schedule to list approved Change Orders, with each Application for Payment.

1.4 APPLICATIONS FOR PROGRESS PAYMENT

- A. Payment Period:
Submit at intervals stipulated in the Agreement.
- B. Present required information as typewritten/computer-generated form.
- C. Form:
AIA G702 Application and Certificate for Payment and AIA G703 Continuation Sheet including continuation sheets when required.
- D. For each item, provide a column for listing each of the following:
 - 1. Item Number
 - 2. Description of Work
 - 3. Scheduled Values
 - 4. Previous Applications
 - 5. Work in Place and Stored Materials under this Application
 - 6. Total Completed and Stored to Date of Application
 - 7. Percentage of Completion
 - 8. Balance to Finish
 - 9. Retainage
- E. Execute certification by signature of authorized officer.

SECTION 01200 – PRICE AND PAYMENT PROCEDURES

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original time of Work.
- H. Submit two copies of each Application for Payment.
- I. Include the following with the application:
 - 1. Transmittal Letter as specified for Submittals in Section 01300.
 - 2. Construction progress schedule, revised and current as specified in Section 01300.
 - 3. Current construction photographs specified in Section 01300.
 - 4. Partial release of liens from major Subcontractors and Vendors.
 - 5. Affidavits attesting to off-site stored products.
- J. When Owner's Representative requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of date with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.5 MODIFICATION PROCEDURES

- A. Owner's Representative will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions on AIA Form G710.
- B. Construction Change Directive:
Owner's Representative may issue a document, signed by Owner, instructing Construction Manager to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The document will describe changes in the Work, and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change in Work.
- C. Pricing Request:
Owner's Representative may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Construction Manager shall prepare and submit a fixed price quotation within 15 days.
- D. Computation of Change in Contract Amount:
 - 1. For change requested by Owner's Representative for work falling under a fixed price contract, the amount will be based on Construction Manager's price quotation.
 - 2. For change requested by Construction Manager, the amount will be based on the Construction Manager's request for a Change Order as approved by Owner.

SECTION 01200 – PRICE AND PAYMENT PROCEDURES

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3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 4. For change ordered by Owner's Representative without a quotation from the Construction Manager, the amount will be determined by Owner's Representative based on the Construction Manager's substantiation of costs as specified for Time and Material Work.
- E. Substantiation of Costs:
Provide full information required for evaluation.
1. Provide the following data:
 - a. Quantities of products, labor, and equipment
 - b. Taxes, insurance, and bonds
 - c. Overhead and profit
 - d. Justification for any change in Contract Time
 - e. Credit for deletions from Contract, similarly documented
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim
 - b. Dates and times work was performed, and by whom
 - c. Time records and wage rates paid
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented
 3. For Time and Material Work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- F. Execution of Change Orders:
Owner's Representatives will issue Change Orders for signatures of parties as provided in the Conditions of the Contract on AIA G701.
- G. After execution of Change Order, promptly revise Schedules of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- H. Promptly revise Progress Schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

1.6 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures specified in Section 01700

SECTION 01200 – PRICE AND PAYMENT PROCEDURES

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PART 2 - PRODUCTS-NOT USED

PART 3 - EXECUTION-NOT USED

END OF SECTION

SECTION 01300 – SUBMITTALS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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PART 1- GENERAL

1.1 SECTION INCLUDES

- A. Project coordination
- B. Preconstruction meeting
- C. Progress meetings
- D. Progress photographs

1.2 RELATED SECTIONS

- A. Section 01700-Execution Requirements:
Additional coordination requirements.
- B. Section 01780-Closeout Submittals:
Project record documents.

1.3 PROJECT COORDINATION

- A. Contractor:
The Contractor shall be responsible for overall project coordination between subcontractors and trade contractors.
- B. Cooperate with the Contractor in allocation of mobilization areas of site; for field offices and storage, for personnel access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Contractor.
- D. Comply with Contractor procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts. Particular attention should be given to the Contractor's subcontractor safety policy.
- E. Comply with instructions of the Contractor for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Contractor.
- G. The Contractor to make the following types of submittals to Owner's Representative:
 - 1. Requests for Interpretation
 - 2. Requests for Substitution
 - 3. Shop Drawings, Product Data, and Samples
 - 4. Test and Inspection Reports
 - 5. Manufacturer's Instructions and Field Reports
 - 6. Applications for Payment and Change Order requests

SECTION 01300 – SUBMITTALS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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7. Progress Schedules
8. Coordination of Drawings
9. Closeout Submittals

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PRECONSTRUCTION MEETING

A. Contractor will schedule a meeting after Notice of Award and prior to mobilization.

B. Attendance Required:

1. Owner:
Owner's Representative and invited Consultants
2. Contractor:
Project Manager and Job Superintendent
3. Major Sub-contractors as requested by the Owner and Contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Submission of progress schedule.
4. Procedures and processing of field decisions, submittals and substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
5. Use of premises by Owner and Contractor.
6. Construction facilities and controls provided by Owner.
7. Temporary utilities provided by Owner.
8. Survey and construction layout.
9. Security and housekeeping procedures.
10. Schedules.
11. Application for payment procedures.
12. Procedures for testing.
13. Procedures for maintaining record documents.

SECTION 01300 – SUBMITTALS

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14. Scheduling.

15. Scheduling activities of Material Testing.

- C. Contractor shall record minutes and distribute copies within five days after meeting to participants, with one copy to Owner's Representative, Owner, participants, and those affected by decisions made.

3.2 PROGRESS MEETINGS

A. Contractor shall schedule and administer meetings throughout the progress of the Work at maximum bi-monthly intervals. A representative from each major trade contractor shall be required to attend these meetings, as requested by the Contractor.

B. The Contractor shall make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required:

1. Contractor, Project Manager and Job Superintendent.
2. Owner's Representative.
3. Engineer/Architect.
4. Major Sub-contractors as appropriate to agenda topics for each meeting.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to Work.

E. Contractor shall record minutes and distribute copies within five days after meeting to participants, with one copy to Owner's Representative, Owner, participants, and those affected by decisions made.

SECTION 01300 – SUBMITTALS

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3.3 PROGRESS PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Owner's Representative.
- B. Take photographs on date for each application for a payment and as follows:
 - 1. Completed demolition and Site clearing.
 - 2. Excavations.
 - 3. Foundations.
 - 4. Utility Installation – depth, alignment, stub-outs
 - 5. Final completion.
- C. Views:
 - 1. Provide non-aerial photographs from three cardinal views at each specified time, until Date of Substantial Completion.
 - 2. Consult with Owner's Representative for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- D. Each Photo:
 - Full color, jpeg format
 - 1. Provide 3 sets on separate USB sticks
 - 2. Size:
5 MB file
 - 3. Identify each photo on file name. Identify name of Project, contract number, phase, date and orientation of view.
- E. Deliver USB sticks with Application for Payment and transmittal letter specified in this Section.

END OF SECTION

SECTION 01325 – CONSTRUCTION PROGRESS SCHEDULE

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER
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PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS (NOT APPLICABLE)

1.3 SUBMITTALS

- A. Within 10 days after date established in Notice To Proceed, submit preliminary schedule defining planned operations for the first 30 days of Work, with a general outline for remainder of Work, in Microsoft Project format on a USB stick.
- B. If preliminary schedule requires revision after review, submit by email in the Microsoft Project format a revised schedule within 10 days.
- C. Within 30 days after review of preliminary schedule, submit draft of proposed complete schedule by email in the Microsoft Project format for review.
- D. Within 10 days after joint review, submit complete schedule by email in the Microsoft Project format.
- E. Submit updated paper schedule with each Application for Payment.
- F. Submit the number of opaque reproductions that the Contractor requires, plus four copies which will be retained by the Owner's Representative.
- G. Submit under transmittal letter form specified in Section 01300.

1.4 QUALITY ASSURANCE

A. Scheduler:

Contractor's personnel specialist Consultant specializing in CPM scheduling with two years minimum experience in scheduling construction work of a complexities comparable to this Project, and having use of computer facilities capable of delivering by email a detailed graphic schedule in Microsoft Project format within 48 hours of request.

1.5 SCHEDULE FORMAT

A. Listings:

In chronological order according to the start date for each activity. Identify each activity with the applicable Specification Section number.

B. Hard Copy Sheet Size:

Multiples of 8-1/2 x 11 inches.

C. Scale and Spacing:

To allow for notations and revisions.

D. Software Format:

Microsoft Project

SECTION 01325 – CONSTRUCTION PROGRESS SCHEDULE

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by Specification Section number.
- C. Identify Work of separate stages and other logically grouped activities.
- D. Provide separate schedule of submittal dates for shop drawings, product data, and dates reviewed submittals will be required from the Owner's Representative. Indicate decision dates for selection of finishes.
- E. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Owner's Representative at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.5 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.

3.6 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, Suppliers, Engineer/Architect, Owner's Representative, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

SECTION 01325 – CONSTRUCTION PROGRESS SCHEDULE

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END OF SECTION

SECTION 01400 – QUALITY CONTROL

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance- control of installation
- B. Tolerances
- C. References and standards
- D. Mock-up
- E. Inspecting and testing laboratory services
- F. Manufacturers' field services

1.2 RELATED SECTIONS

- A. Section 01000 General Specifications:
Contractor's Shop and Working Drawings.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner's Representative/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration physical distortion, or disfigurement.

1.4 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances conflict with Contract Documents, request clarification from Owner's Representative/Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES AND STANDARDS

SECTION 01400 – QUALITY CONTROL

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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- A. For products or workmanship specified by association, trade, or other consensus standards, complies with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product Specification Sections.
- D. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract, nor those of the Owner's Representative/Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 MOCK UP (NOT USED)

1.7 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner may appoint, employ, and pay for specified services of an independent firm to perform construction testing services.
- B. The independent firm will perform testing and other services specified in individual sections and as required by the Owner.
- C. Testing reports will be submitted by the independent firm to the Owner indicating services and indicating compliance or non-compliance with the Contract Documents.
- D. Cooperate with independent firm; furnish safe access and assistance by incidental labor as requested.
 - 1. Notify Owner's Representative and/or independent firm 48 hours prior to expected time for operations requiring services. These operations include, but are not necessarily limited to:
 - a. Cast-in-place concrete placement.
 - b. Bituminous pavement construction.

1.8 INSPECTION SERVICES

- A. Owner may appoint, employ, and pay for specified services of an independent firm to perform observation.
- B. The independent firm will perform observations and other services specified in individual Specification Sections and as required by the Owner.
- C. Reports will be submitted by the independent firm to the Owner, in duplicate, indicating observations and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with independent firm; furnish safe access and assistance by incidental labor as requested.
 - 1. Notify Owner's Representative and /or independent firm 48 hours prior to expected time for operations requiring services.
- E. Observations do not relieve Contractor to perform Work to the contract requirements.

1.9 MANUFACTURERS' FIELD SERVICES

SECTION 01400 – QUALITY CONTROL

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- A. When specified in individual Specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Owner 30 days in advance of required observations. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

SECTION 01600 – MATERIAL AND EQUIPMENT HANDLING

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS – ROOF REPAIRS
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PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Products
- B. Transportation and Handling
- C. Storage and Protection
- D. Product Options
- E. Products List
- F. Substitutions

1.2 RELATED REQUIREMENTS

- A. Section 01400- Quality Control:
Submittal of manufacturer's data
- B. Section 01700- Contract Closeout:
Operation and maintenance data

PART 2 - PRODUCTS

2.1 GENERAL

- A. Products include the material, equipment, and systems used on this Project.
- B. Comply with the Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.

2.2 TRANSPORTATION AND HANDLING

- A. Transport products by methods that will avoid product damage and deliver them in undamaged condition in the manufacturer's unopened containers or packaging.
- B. Provide equipment and personnel to handle unloading and storage of the products by methods to prevent soiling or damage.
- C. Promptly inspect the shipments to assure that the products comply with requirements, the quantities are correct, and the products are undamaged.

2.3 STORAGE AND PROTECTION

- A. Store products in accordance with the manufacturer's instructions, with intact and legible seals and labels.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover the products subject to deterioration with an impervious sheet covering; provide ventilation to avoid condensation.

SECTION 01600 – MATERIAL AND EQUIPMENT HANDLING

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- C. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing of the materials with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.

2.4 PRODUCT OPTIONS

- A. Products specified by Reference Standards or by Description Only: Furnish any product meeting those standards.
- B. Products specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Products specified by Naming Several Manufacturers: Products of named manufacturers meeting Specifications: No options, no substitutions will be allowed.

2.5 PRODUCTS LIST

- A. Within 15 days after the date of Owner-Contractor Agreement, submit a complete list of major proposed for use, with name of the manufacturer, trade name, and model number of each product.

2.6 SUBSTITUTIONS

- A. Only within 15 days after date of the Agreement will the Owner's Representative/Engineer consider requests from the Contractor for substitutions. Subsequently, substitutions will be considered only when a product becomes unavailable due to no fault of the Contractor.
- B. Document each request with complete data substantiating the compliance of the proposed substitution with the Contractor Documents.
- C. The request constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds, in all respects, the specified product.
 - 2. Will provide the same warranty for substitution as for the specified product.
 - 3. Will coordinate installation and make other changes which may be required for the Work to be complete in all respects.
 - 4. Waives claims for additional cost which may subsequently become apparent.
 - 5. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- D. Substitutions will not be considered when they are indicated or implied on shop drawings or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- E. The Owner's Representative/Engineer will determine acceptability of the proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time.

SECTION 01600 – MATERIAL AND EQUIPMENT HANDLING

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F. Only one request for the substitution will be considered for each product. When substitution is not accepted, provide the specified product.

2.7 SYSTEM DEMONSTRATION

A. Prior to the final inspection, demonstrate operation of the entire system to the Owner.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01620 – TRANSPORTATION AND HANDLING

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PART 1 - GENERAL

- A. The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the site of the Work. In addition, the Contractor shall provide preparation for shipment and storage, unloading, handling and re-handling, short-term storage, extended storage, storage facilities, maintenance and protection during storage, preparation for installation, and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.

PART 2 - TRANSPORTATION

- A. All equipment shall be suitably boxed, crafted, or otherwise protected during transportation.

PART 3 - HANDLING

- A. All materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation. All equipment, materials, and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Authority prior to being incorporated into the Work.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Spreader bars or lifting beams shall be used when the distances between lifting points exceeds that permitted by standard industry practice. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.
- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground. Tossing of pipes and pipe fittings and accessories is an unacceptable practice. Items tossed shall be inspected by the Owner's Representative/Engineer and/or Architect. If the Owner's Representative determines that the product has been comprised, Contractor shall replace product at no additional cost to Owner.
- D. Items such as non-metallic pipe, non-metallic conduit, flagpoles, and lighting poles shall be handled using non-metallic slings or straps. Under no circumstance shall chains or steel cables be used to transport or handle non-metallic products.

END OF SECTION

SECTION 01630 – STORAGE AND PROTECTION

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PART 1 - GENERAL

- A. Equipment shall be received, inspected, unloaded, handled, stored, maintained, and protected by the Contractor in a suitable location on or off site, if necessary, until such time as installation is required.
- B. Storage and protection of Contractor-furnished equipment shall be strict conformance with the requirements of the Section entitled "General Equipment Stipulations" of these Specifications.

PART 2 - STORAGE

- A. The Contractor shall be responsible for providing satisfactory storage facilities that are acceptable to the Owner's Representative/Engineer. In the event that satisfactory facilities cannot be provided on site, satisfactory warehouse, acceptable to the Owner's Representative/Engineer, will be provided by the Contractor for such time until the materials and products can be accommodated at the site.
- B. Materials, and products that are stored in a satisfactory warehouse acceptable to the Owner's Representative/Engineer will be eligible for progress payments as though they had been delivered to the job site.
- C. The Contractor shall be responsible for the maintenance and protection of all equipment, materials, and products placed in storage and shall bear all costs of storage, preparation for transportation, transportation, re-handling, and preparation for installation.
- D. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.
- E. Unless otherwise permitted in writing by the Owner's Representative/Engineer, building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.
- F. Tarpaulins and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarpaulins and covers shall be arranged to prevent ponding of water.
- G. PVC pipe, if stored outside, shall be suitably protected from sunlight (UV) by covering with a tarp. Such covering shall be completed and continual.

PART 3 - EXTENDED STORAGE (NOT USED)

END OF SECTION

SECTION 01700 – CONTRACT CLOSEOUT

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PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
1. Inspection procedures.
 2. Project record document submittal
 3. Operating and maintenance manual submittal.
 4. Submittal of warranties.
 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 9.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures:

Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
2. Advise Owner of pending insurance change-over requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include permits and similar releases.
5. Deliver tools, extra stock, and similar items.

B. Inspection Procedures:

On receipt of a request for inspection, the Owner will either proceed with inspection or advise the Contractor of unfilled requirements. The Owner will prepare the Certificate of Substantial Completion

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following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Owner will repeat inspection when requested and assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures:

Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Owner's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Owner's Representative.
4. Submit consent of surety to final payment.
5. Submit a final liquidated damages settlement statement.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure:

The Owner will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Owner's Representative.

1. Upon completion of re-inspection, the Owner's Representative will prepare a certificate of final acceptance, or notify the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, re-inspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General:

Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Owner's reference during normal working hours.

B. Record Drawings:

Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the

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Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
3. Note related Change Order numbers where applicable.
4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

C. Record Specifications:

Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Owner's Representative for the Owner's records.

D. Record Product Data:

Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Owner's Representative for the Owner's records.

E. Record Sample Submitted:

Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Owner's Representative and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals:

Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Owner's Representative for the Owner's records.

PART 2- PRODUCTS (NOT USED)

PART 3- EXECUTION

SECTION 01700 – CONTRACT CLOSEOUT

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3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Record documents
2. Spare parts and materials
3. Tools
4. Cleaning
5. Warranties and bonds

3.2 FINAL CLEANING

A. General:

General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

B. Cleaning:

Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Final Acceptance.
 - a. Remove labels that are not permanent labels.
 - b. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, film and similar foreign substances.
 - c. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

C. Removal of Protection:

Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance:

Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01710 – CLEANUP

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PART 1-GENERAL

- A. During its progress, the Work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipe structures, as a result of Work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the Work, and the ditches, channels, drains, pipes, structures, and work, etc., shall upon completion of the Work, be left in a clean and neat condition.
- C. On or before the completion of the Work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. Upon completion of the Work, the Contractor shall remove from the sites of the subsurface explorations all of his plant, machinery, tools, equipment, temporary work, and surplus materials; shall, unless otherwise directed or permitted in writing, remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- E. The Contractor shall thoroughly clean all materials installed by him and his subcontractors, and on completion of the Work shall deliver it undamaged and in fresh and new-appearing condition.
- F. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his Work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.
- G. The Contractor shall submit a Waste Plan and secure a Waste permit from the VI Waste Management Authority

END OF SECTION

SECTION 01730 – GUARANTEES AND WARRANTIES

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PART 1 - GENERAL

- A. The Contractor shall warrant all materials, products, and workmanship provided by the Contractor under the Contract for a period of ten years after the date of final acceptance of the Work by the Owner.
- B. If, during the warranty period: (a) Any materials or products furnished and/or installed by the Contractor are found to be defective in service by reason on the Contractor's faulty process, structural and/or mechanical design or Specifications; or (b) Any materials, or products furnished by the Contractor shall, as soon as possible after receipt of such defective materials or products, or replace such defective materials or products.

PART 2 - START-UP OF OPERABLE COMPONENTS

- A. Because of the need to maintain operation during construction, it will be necessary to accept operable components of the project at various times prior to the completion and final acceptance of the entire project.
- B. A component of the project, as used herein, shall include all associated structures, paving, piping, etc.
- C. When a component of the project has been completed, checked out, and made ready for operation, the Contractor shall notify the Owner's Representative/Engineer in writing that the component is substantially complete and request an inspection for substantial completion. The Owner will schedule the inspection within ten (10) days of the Contractor's request. If he concurs in the Contractor's statement, the Owner's Representative/Engineer will notify the Contractor in writing that the component is accepted as substantially complete. At the same time, the Owner's Representative/Engineer will submit to the Contractor a list of items that must be completed or corrected before final acceptance can be given.
- D. If a component of the project is needed in order to maintain operation during construction and if it has been accepted as substantially complete, the Contractor shall start up the component when directed by the Owner. Once the component has achieved stable and satisfactory operation (minimum 95 percent availability over a 7- day period), the Contractor shall request beneficial occupancy by the Owner. The Department, if they concur in the Contractor's statement, that stable and satisfactory operation has been achieved, will notify the Contractor in writing within ten (10) days that he is assuming beneficial occupancy of the component.
- E. On the date that the Department assumes beneficial occupancy, the following shall occur:
 - 1. The ten-year warranties for the component specified in Part 1-A of this section will begin
 - 2. The Owner will assume responsibility for operating and maintaining the component

END OF SECTION

SECTION 01780 – CLOSEOUT SUBMITTALS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES:

- A. Project Record Document submittal.
- B. Operation and Maintenance manuals.
- C. Warranties, Bonds, Extra Stock, Permits, and Manuals.

1.3 SUBMITTALS:

- A. Project Record Documents: Submit documents to Owner. The following submittal procedure shall occur prior to Final Acceptance.

- 1. Submit copy of location measurements to Owner for review.
- 2. Contractor will be notified within 15 work days if the submitted documents are acceptable.
- 3. Should the submittal be unacceptable for any reason, the Contractor shall make requested modifications and resubmit to the Owner. Continue to resubmit as necessary until the submittal is acceptable.

- B. Warranties, Bonds, Extra Stock, and Permits:

- 1. Obtain and assemble executed certificates, warranties, bonds, receipts for extra stock, and permits signed by any authorities having jurisdiction. These may be tabbed in the front of the General Operation and Maintenance Manual provided they do not over-fill the binder.
- 2. Verify that documents are in proper form and contain full information.
- 3. Include originals of each in operation and maintenance manual, indexed separately on Table of Contents.
- 4. Co-execute submittals when required.
- 5. Submittal of warranties, bonds, extra stock and permit manual to match submittal requirements.
- 6. Provide Table of Contents neatly typed, in complete and orderly sequence. Include complete information for each of the following:
 - a. Product or work item;
 - b. Firm, with name of principal, address, and telephone number;
 - c. Scope;
 - d. Date of beginning of warranty or service and maintenance contract;

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- e. Duration of warranty or service maintenance contract;
 - f. Proper procedure in case of failure;
 - g. Instances which might affect validity of warranty or bond; and
 - h. Contractor, name or responsible principal, address, and telephone number.
7. Make submittals within ten days after Date of Substantial Completion.
8. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS

2.1 PROJECT RECORD DOCUMENTS:

A. Project Record Documents include the following:

- 1. Marked-up copies of Project Manuals (Specifications and Detail Book, as applicable), all volumes.
- 2. Addenda.
- 3. Reviewed and marked-up copies of shop drawings and product data.
- 4. Newly prepared drawings.
- 5. Change Orders, RFIs and other modifications to the Contract issued in printed form during construction.
- 6. Owner's Representative's Clarifications and Proposal Request with all supporting documentation.
- 7. Field Authorizations.
- 8. Record Samples.
- 9. Field records for variable and concealed conditions.
- 10. Record information on Work that is recorded only schematically.
- 11. Other miscellaneous record documents as listed below and applicable.
 - a. Field records on excavations and foundations.
 - b. Certifications received in lieu of labels on bulk products.
 - c. Batch mixing and bulk delivery records.
 - d. Testing and qualification of tradesmen.
 - e. Documented qualification of installation firms and/or personnel.
 - f. Load and performance testing.

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- g. Inspections and certifications by governing authorities.
- h. Leakage and water-penetration tests.
- i. Final inspection and correction procedures.

PART 3 -EXECUTION

3.1 PROJECT RECORD DOCUMENTS:

A. Maintenance of Documents and Samples:

1. Store and maintain in field office apart from the Contract Documents used for construction, one complete set of record documents and samples which are used to record as-built conditions.
2. Do not use Project Record Documents for construction purposes; protect from deterioration and loss in a secure fire-resistant location. Maintain record documents in good order and in a clean, dry, legible condition.
3. Make record documents and samples available at all times for review by Owner's Representative and the Owner.
4. Record actual revisions to the Work concurrent with construction progress.
5. Ensure entries are complete and accurate, enabling future reference by Owner.
 - a. Following each month Progress Schedule Meeting, Contractor shall meet with all major subcontractors whose work is in progress at the site, including, but not limited to mechanical, plumbing, electrical, security, fire protection, civil, and as otherwise designated, to review all "as-built" revisions on the day-by-day working set of "Project Record Copy" and verify installed record information from the previous month is properly recorded on the day-by-day "Project Record Copy," with all revisions and pertinent information clearly indicated.

B. Project Manual(s):

During the construction period, maintain one complete copy of the Project Manual(s), including Specifications, Detail Book(s), addenda, and one copy of other written Construction Documents, such as Change Orders, and RFIs issued in printed form during construction.

1. Legibly mark these documents in red ink to show substantial variations in actual work performed in comparison with the text of the Specification and modifications. Give particular attention to substations, selection of options, and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related Record Drawing information and product data. Record at each product section description of actual products installed, including the following:
 - a. Product substitutions or alternates utilized.
 - b. Changes made by Addenda and modifications.

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2. Mark Detail Book schedules, details, etc., to indicate the actual installation where the installation varies from the indicated in the Detail Book and modification issued. Complete information in accordance with paragraph for all detail drawings.
3. Each prime contractor (Subcontractor) is responsible for marking up Sections that contain its own Work.
4. General Contractor shall be responsible for collecting marked-up Sections that contain its own work.
5. General Contractor shall be responsible for submitting the complete set of record Specifications as specified.

D. Record Product Data:

1. Maintain one copy of each data Submittal, and mark-up variations in actual work in comparison with submitted information. Include both variations in product as delivered to the site, and variations from manufacturer's instruction and recommendations for installation.
2. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned at a later date by direct observation. Note related Change Orders and mark- up of Record Drawings and Project Manuals.
3. Note related Change Orders and mark-up of record Drawings, where applicable.
4. Upon completion of mark-up, submit complete set to Owner's Representative for Owner's records.
5. Where record Product Data is required as part of maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.
6. Each prime contractor (Subcontractor) shall be responsible for marking up and submitting record Product Data for its own Work.
7. Insofar as possible, insert record product data in individual sub-sections of O&M Manuals. Refer to 3.05 below.

C. Record Sample Submittal:

Immediately prior to date(s) of substantial completion, Owner's Engineer will meet with Contractor at site, and will determine which (if any) of submitted samples maintained by Contractor during progress of the work are to be transmitted to Owner for record purposes. Comply with *NE's* instructions for packaging, identification marking, and delivery to Owner's sample storage place.

D. Miscellaneous Record Submittals:

Refer to paragraph above for listing of miscellaneous record documents and to other Sections of these specifications for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the work. Immediately prior to date of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Owner for their records.

3.2 MAINTENANCE DATA- GENERAL:

A. For Each Product:

List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies.

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B. Product Data:

Mark each sheet to clearly identify specific products and data applicable to installation. Delete inapplicable information.

C. Typed Text:

As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS: (NOT USED)

3.4 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES: (NOT USED)

3.5 OPERATION AND MAINTENANCE MANUALS: (NOT USED)

3.6 WARRANTIES, BONDS, AND PERMIT MANUAL:

A. Project Warranty-General:

1. If, within one (1) year after the Date of Substantial Completion of the Work, or designated portion thereof, or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor, and where applicable, his subcontractor that portion of the work, shall correct it promptly after receipt of a written notice from the Owner or Owner's Representative to do so. This obligation shall survive Termination of the Contract. The Owner will give such notice promptly after discovery of the condition.
2. Refer to Section 01 78 36 for administrative and procedural requirements for tracking project warranty issues subsequent to date of Substantial Completion.

B. Categories of Specific Warranties:

1. Warranties on the work are in several categories, including those of General Conditions, and including (but not necessarily limited to) the following specific categories related to individual units of work specified in the technical sections of these specifications.
 - a. **Special Project Warranty (Guarantee):**
A warranty specifically written and signed by Contractor for a defined portion of the work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor.
 - b. **Specified Product Warranty:**
A warranty which is required by contract documents, to be provided for a manufactured product incorporated into the work; regardless of whether manufacturer has published warranty without regard for specific incorporation of product into the work, or has written and executed warranty as a direct result of contract document requirements.
 - c. **Coincidental Product Warranty:**
A warranty which is not specifically required by contract documents (other than as specified in this section); but which is available on a product incorporated into the work, by virtue of the fact that

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manufacturer of product has published warranty in connection with purchases and uses of product without regard for specific applications except as otherwise limited by terms of warrantee.

2. Refer to individual sections for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).

C. Disclaimer and Limitations:

Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. General Limitations:

It is recognized the specific warranties are intended primarily to protect the Owner against failure of the work to perform as required, and against deficient, defective, and faulty materials and workmanship, regardless of sources.

E. Related Damages and Losses:

1. General:

In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

2. Consequential Damages:

Except as otherwise indicated or required by governing regulations, Special project warranties and product warranties are not extended to cover damage to building contents (other than work of Contract), which occurs as a result of failure of warranted work.

- F. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

G. Reinstatement of Warranty Period:

Except as otherwise indicated, when work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for the time period starting on the date of acceptance of replaced or restored work and ending upon date original warranty would have expired if there had been no failure, with an equitable adjustment for depreciation.

H. Replacement Cost, Obligations:

Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. Contractor shall be responsible for the cost of replacing or restoring defective Work regardless of whether the Owner has benefited from use of the Work through a portion of anticipated useful service life.

I. Owner's Recourse:

Expressed warranties made to the Owner are in condition addition to implied warranties and shall not limit the duties, obligations, right, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

J. Rejection of Warranties:

SECTION 01780 – CLOSEOUT SUBMITTALS

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Owner reserves the right, at time of final acceptance or thereafter, to reject coincidental product warranties submitted by the Contractor, which in opinion of Owner tend to detract from or confuse interpretation of requirements of Contract Documents.

K. Contractor's Procurement Obligations:

Do not purchase, subcontract for, or allow others to purchase or sub-contract for materials or units of work for project where a special project warranty, specified product warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.

L. Co-execute warranties when required. Provide originals of each for inclusion in each operation and maintenance manual.

M. Retain warranties and bonds until time specified for submittal.

END OF SECTION

DIVISION 3-CONCRETE

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF PUBLIC WORKS

PROJECT NAME

Project Location, U.S. Virgin Islands

SECTION 03900 – CONCRETE RESTORATION AND CLEANING

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER

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1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Graffiti removal from concrete surfaces.
2. Cleaning of existing horizontal and vertical concrete surfaces.
3. Epoxy repair of cracks in existing horizontal and vertical concrete surfaces.
4. Cementitious and Epoxy patching of existing deteriorated horizontal and vertical concrete surfaces.

B. Related Sections:

1. Section 09960 – High Performance Coatings Anti-graffiti coating applied to surfaces after cleaning and patching.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO) M-235 – Epoxy Resin Adhesives.

B. American Concrete Institute (ACI) 302.1 – Guide for Concrete Floor and Slab Construction.

C. American Society for Testing and Materials (ASTM):

1. C 78 – Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
2. C 109 – Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50-mm Cube Specimens).
3. C 266 – Test Method for Time of Setting of Hydraulic Cement Paste by Gillmore Needles.
4. C 348 – Test Method for Flexural Strength of Hydraulic Cement Mortars.
5. C 881 – Specification for Epoxy-Resin Base Bonding Systems for Concrete.
6. C 882 – Test Method for Bond-Strength of Epoxy-Resin Systems Used with Concrete.
7. C 883 – Test Method for Effective Shrinkage of Epoxy-Resin Systems Used with Concrete.
8. C 928 – Specifications for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs.

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9. C 944 – Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotary–Cutter Method.
10. C 1202 – Test Method for Electrical indication of Concrete's Ability to Resist Chloride Ion Penetration.
11. C 1042 – Test Method for Comparing Concrete on the Basis of Bond Developed with Reinforcing Steel.
12. C 1059 – Specification for Latex Agents for Bonding Fresh to Hardened Concrete.
13. D 570 – Test Method for Water Absorption of Plastics.
14. D 638 – Test Method for Tensile Properties of Plastics.
15. D 695 – Test Method for Compressive Properties of Rigid Plastics.
16. D 790 – Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

1.3 SUBMITTALS

A. Submit under provisions of Section 01330:

1. Product Data: Include manufacturer's specifications, surface preparation and application instructions, and protection of adjacent surfaces.
2. Test Data: Confirm compliance with specified requirements.

1.4 QUALITY ASSURANCE

A. Mockup:

1. Clean and repair existing concrete surfaces under provisions of Section 01430.
2. Size: [100] square feet of each substrate.
3. Location: [] [Approved by Architect/Engineer].

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle products under provisions of Section 01600.

B. Store materials in a dry area within temperature range recommended by manufacturer.

1.6 PROJECT CONDITIONS

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A. Apply materials within temperature range recommended by manufacturer.

B. Ensure adequate ventilation in application areas.

2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Dayton Superior Corporation, 402 South First Street, Oregon, IL 61061, (800) 745-3707. (DSC)

B. Euclid Chemical Co.

C. W.R. Grace Chemical Co.

D. Substitutions: As approved under provisions of Section 01630

2.2 MATERIALS – CLEANERS

A. Concrete and Ceramic Tile Floor Cleaner, Degreaser, and Stripper:

1. Product: Concrete Floor Cleaner and Degreaser (DSC J-47).

2. Description: Water soluble cleaning and degreasing solution.

B. Wood or Vinyl Floor Cleaner, Degreaser, and Stripper:

1. Product: Citrus Peel (DSC J-48).

2. Description: Water soluble, biodegradable, cleaning, degreasing, and stripping solution.

3. VOC compliant.

2.3 MATERIALS – GRAFFITI CLEANERS

A. Light Duty Graffiti Cleaner:

1. Product: Graffiti Klean (DSC J-45).

2. Description: Biodegradable, non-toxic graffiti cleaner.

3. VOC compliant.

B. Heavy Duty Graffiti Cleaner:

1. Product: Superior Graffiti Remover (DSC J-46) Gel.

2. Description: Heavy duty graffiti cleaner.

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3. VOC compliant.

2.4 MATERIALS – CEMENTITIOUS PATCHING COMPOUNDS

A. Non-Sag Patching Compound for Formed Vertical and Overhead Surfaces:

1. Products:

a. DSC HD-50.

b. “Verticoat Supreme” by The Euclid Chemical Company (or equal) one component, microsilica and latex modified, non-sag repair mortar. Bonding strength of concrete to concrete after 28 days not less than 2,100 psi (ASTM C-882) and compressive strength of not less than 6,200 psi after 28 days (ASTM C109).

c. Approved Equal

2. Description: Fast setting, cement based, fiber reinforced, latex modified, heavy duty concrete patch for horizontal surfaces and vertical and overhead form-and-pour" applications.

3. Pourable and pumpable.

4. Meet ASTM C 928.

5. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa) At 75 degrees F (24 degrees C)

a. 1 hour 2500 (17.2)–

b. 3 hours 3500 (24.1)

c. 1 day 6145 (42.4)

d. 7 days 7370 (50.8)

e. 28 days 7990 (55.1)

6. Bond strength: Tested per ASTM C 882 with following results: Test Age Bond Strength – psi (MPa)

a. 1 day 1950 (13.4)

b. 7 days 2550 (17.6)

7. Length change: Tested per ASTM C 928 with following results: Test Age Water Storage Air Storage Differential

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- a. 28 days Plus 0.03 percent Minus 0.09 percent 0.12 percent

8. Chloride ion permeability: Tested per ASTM C 1202.

- a. Elapsed time: 360 minutes.

- b. Total charge passed through specimen: 646 coulombs. c. Chloride permeability rating: Very low.

B. Fiber Reinforced Patching Compound for Floor Surfaces:

1. Product: Day-Chem Perma Patch.

2. Description: Fast setting, cement based, fiber reinforced, silica fume, heavy duty concrete patch for horizontal surfaces.

3. Meet ASTM C 928.

4. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa)

- a. 1 hour 2500 (17.2)

- b. 3 hours 4000 (27.6)

- c. 1 day 5200 (35.8)

- d. 7 days 9000 (62.0)

- e. 28 days 10,800 (74.5)

5. Length change: Tested per ASTM C 928 with following results: Test Age Water Storage Air Storage Differential 28 days Plus 0.03 percent Minus 0.07 percent 0.10 percent

C. Patching Compound for Thin Resurfacing of Floors:

1. Product: DSC Thin Resurfacer.

2. Description: Cement based, polymer modified concrete patching and resurfacing compound for horizontal applications from 1/8 to 1/2 inch (3 to 13 mm).

3. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa)

- a. 1 day 1600 (11.0)

- b. 3 days 3200 (22.0)

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c. 7 days 5700 (39.3)

d. 28 days 6700 (46.2)

4. Bond strength: Tested per ASTM C 1042 with following results: Test Age Bond Strength – psi (MPa)

a. 7 days 2700 (18.6)

b. 28 days 3500 (24.1)

5. Flexural strength: 1100 psi (7.6 MPa), tested per ASTM C 78 at 28 days.

D. Polymer Modified Patching Compound for Floors:

1. Product: DSC Polyfast.

2. Description: Cement based, polymer modified, shrinkage compensating concrete patching compound for vertical and overhead applications.

3. Meet ASTM C 928.

4. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa)

a. 1 day 4100 (22.2)

b. 3 days 6500 (44.8)

c. 7 days 8100 (55.8)

d. 28 days 9000 (62.0)

5. Bond strength: 5100 psi (35.1 MPa), tested per ASTM C 1042 at 7 days.

6. Flexural strength: 2000 psi (13.8 MPa), tested per ASTM C 348 at 28 days.

7. Chloride ion permeability: Tested per ASTM C 1202.

a. Elapsed time: 360 minutes.

b. Total charge passed through specimen: 8 coulombs. c. Chloride permeability rating: Negligible.

8. Length change: Tested per ASTM C 928 with following results: Test Age Water Cure Air Cure 28 days Minus 0.027 percent Minus 0.03 percent

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E. Fast Set Concrete Patching Compound:

1. Product: Re-Crete 20 Minute Set with Ad Bond (DSC J-40).
2. Description: Cement based patching compound with accelerators.
3. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa)
 - a. 1 day 2250 (15.5)
 - b. 3 days 5100 (35.2)
 - c. 28 days 8000 (55.1)

F. Water Stop Patching Compound:

1. Product: Water Stop.
2. Description: Noncorrosive, non-rusting, hydraulic cement.
3. Compressive strength: Tested per ASTM C 109 with following results: Test Age Compressive Strength – psi (MPa)
 - a. 1 hour 975 (6.7)
 - b. 24 hours 1870 (12.9)
 - c. 3 days 2950 (20.3)
 - d. 7 days 3650 (25.1)
 - e. 28 days 5910 (40.7)
4. Setting time: 2–1/2 minutes initial, 3–1/2 minutes final; tested per ASTM C 266. Include one of the following epoxy adhesives for patching, resurfacing, and anchoring.

2.5 MATERIALS – EPOXY ADHESIVES

A. Epoxy Adhesive for Bonding Fresh to Existing Concrete and Anti-Corrosion for Steel:

1. Products:
 - a. Sure Level Epoxy (DSC J-57).
 - b. “Duralprep AC” by The Euclid Chemical Company (http://euclidchemical.com/product_catalog.asp?top=288) or equal 3-part solvent free

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pre-proportioned, water based, epoxy-modified, cement bonding agent and anti-corrosion coating for steel reinforcement; used as a bonding agent for placing fresh concrete to existing concrete and for repair and restoration of concrete surfaces.

c. Approved Equal.

2. Description: Two component, pre-proportioned, 100 percent solids, low modulus, high strength, low viscosity epoxy.
3. VOC compliant.
4. Tested to ASTM C 881, Type 3, Grade 1, Classes B and C.
5. Compressive strength: 7500 psi (51.7 MPa) in 24 hours, tested per ASTM D 579.
6. Bond strength: 1600 psi (11.0 MPa) at 14 days, tested per ASTM C 882.
7. Tensile strength: 2500 psi (17.2 MPa), tested per ASTM D 638.

B. Epoxy Adhesive for Anchors:

1. Product: Sure-Anchor I (DSC J-51).
2. Description: Two-component, pre-proportioned, 100 percent solids, fast setting, moisture insensitive epoxy adhesive.
3. Tested to ASTM C 881, Types 1, 2, 4, and 5, Grade 3, Classes B and C.
4. VOC compliant.
5. Compressive strength: 10,600 psi (73.0 MPa), tested per ASTM D 695 at 7 days.
6. Modulus of elasticity (compressive): 500,000 psi (3447 MPa), tested per ASTM D 695.
7. Water absorption: 0.9 percent, tested per ASTM D 570.
8. Concrete pullout resistance: Rod Diameter – Inches (mm) Hole Diameter – Inches (mm) Hole Depth – Inches (mm) Ultimate Pullout Strength based on Concrete Compressive Strength – pounds (kg)
 - a. 3500 (24) 4000 (27) 4500 (31)
 - b. 3/8 (10) 7/16 (11) 4 (102) 7100 (3216) 7150 (3238) 7190 (3257)
 - c. 3/8 (10) 7/16 (11) 5.5 (140) 8500 (3850) 8600 (3896) 8690 (3936)
 - d. 1/2 (13) 9/16 (14) 5 (127) 14,200 (6432) 14,400 (6523) 14,600 (6613)

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- e. 1/2 (13) 9/16 (14) 6.5 (165) 17,600 (7972) 17,800 (8063) 18,000 (8154)
- f. 5/8 (16) 3/4 (19) 6 (152) 21,500 (9739) 21,700 (9830) 21,900 (9920)
- g. 5/8 (16) 3/4 (19) 7.75 (197) 25,400 (11,506) 25,800 (11,687) 26,200 (11,868)
- h. 3/4 (19) 7/8 (22) 7 (178) 28,600 (12,955) 28,800 (13,046) 29,200 (13,227)
- i. 3/4 (19) 7/8 (22) 9.5 (240) 34,600 (15,673) 34,800 (15,764) 35,200 (15,945)
- j. 7/8 (22) 1 (25) 8.0 (203) 34,400 (15,583) 34,600 (15,673) 35,000 (15,855)
- k. 7/8 (22) 1 (25) 10 (254) 43,500 (19,705) 43,800 (19,841) 44,100 (19,977)
- l. 1 (25) 1-1/8 (28) 10 (254) 43,600 (19,750) 43,900 (19,886) 44,200 (20,022)
- m. 1 (25) 1-1/8 (28) 12 (305) 49,600 (22,468) 49,900 (22,604) 50,200 (22,740)

2.6 MATERIALS – FLOOR TOPPINGS AND OVERLAYS

A. Heavy Duty Floor Topping or Overlay for Equipment Traffic:

- 1. Product: DSC Emery Tuff Top.
- 2. Description: Ready to use, floor topping containing pure emery, special additives, and portland cement.
- 3. Moh hardness of treated concrete: 8 to 9.
- 4. Compressive strength of treated concrete: 14,000 psi (96.5 MPa) in 28 days, tested per ASTM C109.
- 5. Emery/corundum: Contain minimum 50 percent aluminum oxide.
- 6. Abrasion resistance of treated concrete: 0.4 grams average weight loss, tested per ASTM C 944 with applied load and time of abrasion doubled.
- 7. Approved for use on Class 5 through 8 industrial floors per ACI 302.1.
- 8. Color: [Battleship Grey] [French Grey] [Tan] [Terra Cotta] [Tile Red] [Black] [Brown] [Green] [Light Reflective].

B. Epoxy Floor Topping or Overlay for Pedestrian Traffic:

- 1. Product: Sure Level Epoxy (DSC J-57).
- 2. Description: Two component, pre-proportioned, 100 percent solids, low modulus, high

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strength, low viscosity epoxy for resurfacing with epoxy or by the broom-and-seed" method.

3. VOC compliant.
4. Tested to ASTM C 881, Type 3, Grade 1, Classes B and C.
5. Compressive strength: 7500 psi (51.7 MPa) in 24 hours, tested per ASTM D 579.
6. Bond strength: 1600 psi (11.0 MPa) at 14 days, tested per ASTM C 882.
7. Tensile strength: 2500 psi (17.2 MPa), tested per ASTM D 638.

2.7 MATERIALS – EPOXY CRACK REPAIR

A. Epoxy Adhesive:

1. Product: Sure-Inject (DSC J-56).
2. Description: Two component, pre-proportioned, 100 percent solids, low viscosity epoxy adhesive.
3. VOC compliant.
4. Tested to ASTM C 881, Types 1, 2, 4, and 5, Grade 1, Classes B and C.
5. Compressive strength: Minimum 13,000 psi (89.6 MPa), tested per ASTM D 695.
6. Concrete bond strength: 2000 psi (13.8 MPa) at 14 days, tested per ASTM C 882.
7. Tensile strength: 7400 psi (51 MPa) at 7 days, tested per ASTM D 638.
8. Water absorption: 0.23 percent, tested per ASTM D 570.
9. Shrinkage: Tested per ASTM C 883.

2.8 MATERIALS – EPOXY REINFORCING STEEL SPRAY

A. Epoxy Reinforcing Spray:

1. Product: Rebar Epoxy Spray (DSC J-62).
2. Description: Epoxy coating in self-contained spray applicator.
3. Color: Green.

2.9 MATERIALS – BONDING AGENTS

A. Epoxy Adhesive Bonding Agent Concrete to Concrete:

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1. Product: Resi-Bond (DSC J-58).
2. Description: Two component, pre-proportioned, 100 percent solids, high modulus, medium viscosity epoxy adhesive.
3. VOC compliant.
4. Tested to ASTM C 881, Types 1, 2, 4, and 5, Grade 2, Classes B and C and AASHTO M-235, Class III – Standard Version.
5. Compressive strength: Minimum 10,400 psi (71.7 MPa) in 7 days, tested per ASTM D 695.
6. Concrete bond strength: 2550 psi (17.6 MPa) at 2 days and 3150 psi (21.7 MPa) at 14 days, tested per ASTM C 882.
7. Tensile strength: 7580 psi (52.3 MPa) at 7 days, tested per ASTM D 638.
8. Water absorption: 0.13 percent, tested per ASTM D 570.
9. Modulus of elasticity: 275,000 psi (1896 MPa), tested per ASTM D 695.

B. Latex Adhesive Bonding Agent Concrete to Concrete:

1. Product: Day-Chem Ad Bond (DSC J-40).
2. Description: Non-reemulsifiable, acrylic latex emulsion bonding agent.
3. Tested to ASTM C 1059, Type II.
4. Bond strength: Tested per ASTM C 1042, Type II with following results: Test Age
Compressive Strength – psi (MPa)
 - a. 14 days 1865 (12.9)
 - b. 28 days 2436 (16.8)

C. Interior Bonding Agent:

1. Product: Superior Concrete Bonder (DSC J-41). Do not use this product in exterior applications.
2. Description: Re-emulsifiable/re-wettable, polyvinyl acetate emulsion bonding agent.

2.10 SEALANTS

- A. High-performance, low-modulus 1-part polyurethane, non-sag elastomeric sealant. ASTM C-920, Type S, Grade NS, Class 25 non-sag. Sikaflex – 15LM as manufactured by Sika

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Restoration Systems or approved equal.

2.11 MOISTURE RETAINING COVER

- A. ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- B. Euclid Chemicals high solids water based curing compound.
- C. W.R. Grace “Cure and Seal”

2.12 ACCESSORIES

- A. Sand: Clean, well graded silica sand.
- B. Aggregate: 3/8 inch (10 mm) clean, washed pea gravel.

2.13 MIXING

- A. Mix materials in accordance with manufacturer's instructions. Include the following for epoxy patching compounds.
- B. Epoxy Patching Compound: Add sand to mixed epoxy adhesive in accordance with manufacturer's instructions.
- C. Cementitious Patching Compound: Mix aggregate with patching compound at rate not to exceed manufacturer's recommended ratio.
- D. Do not over-water or retemper mixes.

3 EXECUTION

3.1 GRAFFITI REMOVAL

- A. Follow manufacturer's instructions for application and coverage.
- B. Apply cleaner in a flood coat by low pressure spray, roller, brush, or sponge.
- C. Allow cleaner to remain on surface for 5 to 10 minutes, then rinse completely with clean water.
- D. If graffiti remains on surface, reapply cleaner to affected areas and scrub with stiff bristle brush. Rinse completely with clean water.
- E. After surface has dried completely, apply anti-graffiti coating.

3.2 PREPARATION

- A. Clean surfaces to be patched or bonded:

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1. Remove loose and foreign matter by sandblasting, chipping, wire brushing, or grinding.
 2. Remove deteriorated and loose concrete to expose firm substrate.
 3. Clean holes with bristle brush.
 4. Remove remaining water and dust with clean, compressed air.
 5. All oils, greases, dirt, old coatings or chemical contaminants must be removed. All steel surfaces should be blasted to a “Near White” metal finish using clean dry blasting media.
- B. Protect adjacent and underlying surfaces.

3.3 APPLICATION – EPOXY REINFORCING SPRAY

- A. Follow manufacturer's instructions.
- B. Apply to exposed reinforcing steel in several light, even coats.

3.4 APPLICATION – BONDING AGENTS

- A. Follow manufacturer's instructions.
- B. Apply by brush, broom, or roller.
- C. Place patching compounds within time period recommended by manufacturer, or recoat.

3.5 APPLICATION – INTERIOR EPOXY MORTAR FOR PATCHING OR OVERLAY

- A. Follow manufacturer's instructions.
- B. Prime prepared substrate with mixed neat epoxy adhesive.
- C. Apply epoxy mortar before primer becomes tack free.
- D. Place in maximum 1 inch (25 mm) lifts. Allow each lift to cure before placing next lift.
- E. Minimum thickness: 1/4 inch (6 mm).
- F. Levels of Repair:
 1. Level 1 repair consists of minor surface concrete crack and loose material removal and patch repair.
 2. Level 2 repair consists of medium depth concrete repair, removal of loose and damaged materials but no exposed rebar materials.

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3. Level 3 repair consists of severe concrete repair. Missing and damaged concrete surfaces may require rebuilding. Exposed rebar is common.

3.6 APPLICATION – EXTERIOR EPOXY MORTAR PATCHING OR OVERLAY

- A. Follow manufacturer's instructions.
- B. Prime prepared substrate with mixed neat epoxy adhesive.
- C. Apply epoxy mortar before primer becomes tack free.
- D. Thickness: 1/4 inch (6 mm) minimum to 1/2 inch (13 mm) maximum. Do not use the following for exterior slabs-on-grade.
- E. Levels of Repair:
 1. Level 1 repair consists of minor surface concrete crack and loose material removal and patch repair.
 2. Level 2 repair consists of medium depth concrete repair, removal of loose and damaged materials but no exposed rebar materials.
 3. Level 3 repair consists of severe concrete repair. Missing and damaged concrete surfaces may require rebuilding. Exposed rebar is common.

3.7 APPLICATION – EPOXY BROADCAST OVERLAY

- A. Follow manufacturer's instructions.
- B. Prime prepared substrate with mixed neat epoxy adhesive.
- C. Apply mixed epoxy before primer becomes tack free, using notched squeegee.
- D. After material levels, broadcast sand slowly over surface at rate of 2 pounds per square foot (10 kg/sq m); allow to settle into epoxy binder. Remove excess sand after epoxy sets.
- E. After first coat has dried, apply second coat of epoxy and sand.

3.8 APPLICATION – EPOXY CRACK REPAIR

- A. Follow manufacturer's instructions.
- B. Replace loose, missing or torn joint sealant with specified sealant. Prime and install the sealant in accordance with sealant manufacturer's instructions. For all concrete cracks greater than 1/16" in width; V-groove out the joint to a minimum 1/4" width and install a urethane sealant.
- C. Space injection holes at 8 to 36 inch (200 to 900 mm) intervals depending on crack width and

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thickness of member.

- D. Set injection ports in epoxy adhesive and allow to cure.
- E. Seal cracks with epoxy adhesive to prevent loss of injected epoxy.
- F. Inject epoxy to refusal.
- G. After curing, remove injection ports and grind surfaces smooth.

3.9 PATCHING HORIZONTAL SURFACES – CEMENTITIOUS COMPOUNDS

- A. Follow manufacturer's instructions.
- B. Saw cut perimeter of area to be repaired.
- C. Wet surfaces or apply bonding agent.
- D. Thoroughly work repair material into substrate.
- E. Float or trowel smooth and flush with adjacent surfaces.
- F. Finish to match texture of surrounding concrete.
- G. Cure surfaces immediately after finishing to prevent moisture loss; apply curing compound or use wet burlap. Protect concrete from excessive hot temperatures. Comply with recommendations in ACI 305R for hot-weather protection during curing.
 - 1. If curing compound is used, cure with Euclid Chemicals high solids, water based curing compound or equal. Under hot, dry, direct sunlight or windy conditions apply a second coat of curing compound after the first has dried.
 - 2. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

3.10 PATCHING VERTICAL AND OVERHEAD SURFACES – CEMENTITIOUS COMPOUNDS

- A. Follow manufacturer's instructions.
- B. Wet surfaces or apply bonding agent.
- C. Thoroughly work material into substrate without voids.
- D. Float or trowel smooth and flush with adjacent surfaces.
- E. Finish to match texture of surrounding concrete.

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F. Cure surfaces immediately after finishing to prevent moisture loss; apply curing compound. Protect concrete from excessive hot temperatures. Comply with recommendations in ACI 305R for hot-weather protection during curing.

1. Curing compound is required. Cure with Euclid Chemicals high solids, water based curing compound or equal. Under hot, dry, direct sunlight or windy conditions apply a second coat of curing compound after the first has dried.
2. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

3.11 DEFECTIVE CONCRETE:

A. Repair and patch defective areas when approved by Owner's Representative. Remove and replace patch to Owner's Representative's approval.

END OF SECTION

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PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division I Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Exterior non-load-bearing curtain-wall framing.
 2. Ceiling joist framing.
 3. Gypsum sheathing and air-infiltration barriers.

1.3 DEFINITIONS

- A. Minimum Uncoated Steel Thickness:
Minimum uncoated thickness of cold-formed framing delivered to the Project site shall be not less than 95 percent of the thickness used in the cold-formed framing design. Lesser thicknesses shall be permitted at bends due to cold forming.
- B. Producer:
Entity that produces steel sheet coil fabricated into cold-formed members.

1.4 SUBMITTALS

- A. Product Data:
For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings:
Show layout, spacing, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining Work.
1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency indicating steel sheet complies with requirements.
- D. Welding Certificates:
Copies of certificates for welding procedures and personnel.
- E. Qualification Data:
For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses

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of Project Managers and owners, and other information specified.

F. Product Test Reports:

From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:

1. Expansion anchors.
2. Power-actuated anchors.
3. Mechanical fasteners.
4. Vertical deflection clips.
5. Miscellaneous structural clips and accessories.

G. Research/Evaluation Reports:

Evidence of cold-formed metal framing's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

An experienced installer who has completed cold formed metal framing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in service performance.

B. Engineering Responsibility:

Engage a qualified professional engineer to prepare design calculations, Shop Drawings, and other structural data.

C. Professional Engineer Qualifications:

A professional engineer who is legally qualified to practice in the Virgin Islands and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

D. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency indicating steel sheet complies with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and galvanized-coating thickness.

E. Testing Agency Qualifications:

An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

F. Welding:

Qualify procedures and personnel according to AWS D 1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

G. Fire-Test-Response Characteristics:

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Where metal framing is part of a fire resistance rated assembly, provide framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings:

Indicated by GA File Numbers in GA-600, "Fire Resistance Design Manual," or by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.

H. AISI Specifications:

Comply with AISI's "Specification for the Design of Cold Formed Steel Structural Members" or "Load and Resistance Factor Design Specification for Cold Formed Steel Structural Members" and the following for calculating structural characteristics of cold formed metal framing:

1. CCFSS Technical Bulletin:

"AISI Specification Provisions for Screw Connections."

I. Pre-installation Conference:

Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

J. Engineering Criteria:

The maximum allowable deflection (due to wind load) of framing supporting masonry veneer walls shall be $L/720$. The maximum allowable lateral deflection of general interior partition framing shall be $L/240$. Engineering of interior metal stud systems shall accommodate a lateral load of 5 psf.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2- PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers:

Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers:

Subject to compliance with requirements, provide cold-formed metal framing by one of the following:

1. Clark Steel Framing Industries.

2. Consolidated Systems, Inc.

3. Dale Industries, Inc.

4. Dietrich Industries, Inc.

5. MarinoWare; Div. of Ware Industries, Inc.

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6. Steel Construction Systems.
7. Super Stud Building Products, Inc.
8. Unimast, Inc.
9. Hexaport International Ltd.

2.2 MATERIALS

A. Steel Sheet:

ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade:
50 (340), Class 1 or 2 50 (340), Class 3.
2. Coating:
G60 (ZI80) G90 (Z275).

2.3 NON-LOAD-BEARING CURTAIN-WALL FRAMING

A. Steel Studs:

Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, complying with ASTM C 955, and as follows:

1. Minimum Uncoated-Steel Thickness:
0.0538 inch (1.37 mm).
2. Flange Width:
1-5/8 inches (41 mm).

B. Steel Track:

Manufacturer's standard U-shaped steel track, of web depths indicated, not punched, with unstiffened flanges, complying with ASTM C 955, and as follows:

1. Minimum Uncoated Steel Thickness:
0.0538 inch (1.37 mm) Matching steel studs.
2. Flange Width:
1 -1/4 inches (32 mm).

C. Single Deflection Track:

Manufacturer's single, deep-leg, U-shaped steel track; not punched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads, and as follows:

1. Minimum Uncoated-Steel Thickness:
0.0538 inch (1.37 mm).
2. Flange Width:
2 1/2 (65 mm) 1/2 inch.

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D. Double Deflection Tracks:

Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; not punched, with unstiffened flanges.

1. Outer Track:

Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads, and as follows:

a. Minimum Uncoated-Steel Thickness: 0.0538 inch (1 .37 mm).

b. Flange Width: 2 inches (50 mm)

2. Inner Track:

Of web depth indicated, and as follows:

a. Minimum Uncoated-Steel Thickness: 0.0538 inch (1.37 mm).

b. Flange Width: 3-1/2 inches is typical.

E. Vertical Deflection Clips:

Manufacturer's standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure.

2.4 CEILING JOIST FRAMING

A. Steel Ceiling Joists:

Manufacturer's standard C-shaped steel sections, of web depths indicated, not punched, with stiffened flanges, complying with ASTM C 955, and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0538 inch (1.37 mm).

2. Flange Width: 1-5/8 inches (41 mm), minimum.

2.5 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi (230 MPa).

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.

2. Bracing, bridging, and solid blocking.

3. Web stiffeners.

4. End clips.

5. Foundation clips.

6. Gusset plates.

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7. Stud kickers, knee braces, and girts.
8. Joist hangers and end closures.
9. Hole reinforcing plates.
10. Backer plates.

2.6 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips:

ASTM A 240/A 666, Stainless Steel Type 316

B. Anchor Bolts:

ASTM A 240/A 666, Stainless Steel Type 316, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers.

C. Expansion Anchors:

Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

D. Power-Actuated Anchors:

Fastener system of type suitable for application indicated, fabricated from corrosion resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

E. Mechanical Fasteners:

Corrosion resistant-coated, self-drilling, self-threading steel drill screws.

1. Head Type:

Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. Welding Electrodes:

Comply with AWS standards.

2.7 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint:

SSPC-Paint 20 or DOD-P-21035 ASTM A 780.

B. Nonmetallic, Non-shrink Grout:

Premixed, nonmetallic, noncorrosive, non-staining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.

C. Thermal Insulation:

ASTM C 665, Type I, un-faced mineral-fiber blankets produced by combining glass or slag fibers with thermosetting resins.

2.8 GYPSUM SHEATHING

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A. Glass-Mat Gypsum Sheathing Board:

ASTM C 1177/C 1177M.

1. Type and Thickness:

Type X, 5/8 inch (15.9 mm) thick.

2. Size:

48 by 96 inches (1219 mm by 2438 mm).

3. Available Product:

Subject to compliance with requirements, a product that may be incorporated into the Work includes, but is not limited to, "Dens-Glass Gold" by Georgia-Pacific Corp.

2.9 SHEATHING ACCESSORIES

A. Air-Infiltration Barrier:

Asphalt-saturated organic felt, ASTM D 226, Type 1 (No. 15 asphalt felt), unperforated for use where cavity wall rigid insulation not installed with brick veneer or where EIFS systems not employed.

B. Fasteners:

Steel drill screws, ASTM C 954, in length recommended by sheathing manufacturer for thickness of sheathing board to be attached, with organic polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

2.10 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.

2. Cut framing members by sawing or shearing; do not torch cut.

3. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

4. Fasten other materials to cold -formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances:

Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

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1. Spacing:
Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness:
Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3- EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated.
- C. Install shop or field fabricated, cold-formed framing and securely anchor to supporting structure.
 1. Bolt or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
 1. Cut framing members by sawing or shearing; do not torch cut.
 2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
- E. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.

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- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances:
Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 NON-LOAD-BEARING CURTAIN-WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing:
16 inches (406 mm).
- C. Set studs plumb, except as needed for diagonal bracing or required for not plumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Install single deep-leg deflection tracks and anchor to building structure.
 - 2. Install double deep-leg deflection tracks and anchor outer track to building structure.
 - 3. Connect vertical deflection clips to bypassing infill studs and anchor to primary building structure.
- E. Install horizontal bridging in curtain-wall studs, spaced in rows indicated on Shop Drawings but not more than 54 inches (1370 mm) apart. Fasten at each stud intersection.
 - 1. Top Bridging for Single Deflection Track:
Install row of horizontal bridging within 12 inches (300 mm) of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

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- a. Install solid blocking at centers indicated.
 2. Bridging:
Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
 3. Bridging:
Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain wall framing system.

3.5 GYPSUM SHEATHING INSTALLATION

- A. General:
Install gypsum sheathing to comply with GA-253 and manufacturer's written instructions.
- B. Cut boards at penetrations, edges, and other obstructions of the work; fit tightly against abutting construction, except provide a 3/8-inch (9-mm) setback where non-load-bearing construction abuts structural elements.
- C. Coordinate sheathing installation with flashing and joint sealant installation so these materials are installed in the sequence and manner that prevent exterior moisture from passing through completed exterior wall assembly.
- D. Apply fasteners so screw heads bear tightly against face of sheathing boards but do not cut into facing.
- E. Do not bridge building expansion joints with sheathing; cut and space edges to match spacing of structural support elements.
- F. Vertical Installation:
Install 48-inch (1219-mm) 1200-mm wide gypsum sheathing boards vertically with vertical edges centered over flanges of steel studs. Abut ends and edges of each board with those of adjacent boards. Screw-attach boards at perimeter and within field of board to each steel stud at approximately 8 inches (200 mm) O.C. and set back a minimum of 3/8 inch (9 mm) from edges and ends of boards.
- G. Air-Infiltration Barrier Application:
Cover sheathing with air-infiltration barrier as follows:
1. Cut back air-infiltration barrier 1/2 inch (13 mm) on each side of break in supporting members at expansion- or control-joint locations.
 2. Apply asphalt-saturated organic felt horizontally with 2-inch (50-mm) overlap and 6-inch (150-mm) end lap; fasten to sheathing with corrosion-resistant staples.

3.6 FIELD QUALITY CONTROL

- A. Testing:
Owner will engage a qualified independent testing agency to perform field quality-control testing.

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- B. Field and shop welds will be subject to inspection and testing.
- C. Testing agency will report test results promptly and in writing to Contractor and Project Manager.
- D. Remove and replace Work that does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements

3.7 REPAIRS AND PROTECTION

A. Galvanizing Repairs:

Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting:

Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted, cold-formed metal framing. Paint framing surfaces with same type of shop paint used on adjacent surfaces.

C. Protect paper-surfaced gypsum sheathing that will be exposed to weather for more than 30 days by covering exposed exterior surface of sheathing with a securely fastened air-infiltration barrier. Apply covering immediately after sheathing is installed.

D. Protect cutouts, corners, and joints in sheathing by filling with a flexible sealant or by applying tape recommended by sheathing manufacturer at time sheathing is applied.

E. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05500 – MISCELLANEOUS METALWORK

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PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included in this Section:

1. Provide all engineering, labor, materials, equipment, and services, etc., required to engineer, furnish, and install all miscellaneous metal work and related accessories as indicated on the Drawings, specified herein, or otherwise required for a complete and proper job.
2. The Work shall include, but shall not necessarily be limited to:
 - a. Miscellaneous structural steel.
 - b. Miscellaneous steel plates and angles.
 - c. Miscellaneous steel brake metal, pans, closures, trim, and other configurations.
 - d. Miscellaneous carpenter's iron as required.
 - e. Miscellaneous frames, brackets, and supports for hardware, window systems, and equipment including all mechanical, electrical, medical, athletic, and theatrical equipment. Including seismic bracing for all miscellaneous metal frames, stands, and supports.
 - f. Miscellaneous frames and supports for special doors, operable walls, mesh partitions, overhead supported toilet partitions.
 - g. Loose lintels and relieving angles not furnished under SECTION 05100: STRUCTURAL STEEL.
 - h. Steel handrails and guardrails.
 - i. Ladders.
 - j. Bollards.
 - k. Pit covers and frames.
 - l. Expansion joint covers.
 - m. Steel corner guards.
 - n. Trench drains.
 - o. Expanded steel treads and landings.
 - p. Abrasive nosing for concrete stairs.
 - q. Support frames for benches and counters.
 - r. Roof blocking fastening requirements.
 - s. Masonry wall top clips.

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3. It shall be a requirement of the Work of this Section to thoroughly review all of the Contract Documents and provide any and all miscellaneous metal work required for a complete and proper job.

B. Related Work Specified Elsewhere:

1. SECTION 03300:
CAST-IN-PLACE CONCRETE
2. SECTION 04810:
UNIT MASONRY ASSEMBLIES
3. SECTION 05100:
STRUCTURAL STEEL
4. DIVISION 23:
MECHANICAL
5. DIVISION 26:
ELECTRICAL

1.2 SUBMITTALS

A. Product Data:

Submit product data for manufactured products specified herein.

B. Shop Drawings:

1. Submit shop drawings for each item or assembly. Shop drawings shall accurately and clearly show in detail the construction, sizes, gauges, dimensions, methods of assembly, supports, finishes, and all other pertinent data and information.
 - a. Submit stair, ladder, and railing shop drawings drawn at not less than 1A" scale with components shown in related positions. Provide larger scale custom details, control details and dimensions not governed by job conditions. Show all required field measurements.
 - b. Submit lintel fabrication schedule including location, type, size, length, and finish (primed or galvanized coating class).

C. Certifications:

1. Submit manufacturer's certification that the stairs, platforms, railings, and ladders provided are in full compliance with the requirements of the Contract Documents, and are totally suitable for the proposed installations when installed in accordance with the shop drawings.
2. Submit certificates indicating that each welder has satisfactorily passed AWS qualification tests for welding processes involved and if pertinent, has undergone re-certification.
3. Steel fabricator's in-plant special inspections program including: registration of special inspections program, written procedural and quality control manuals and evidence of periodic auditing of fabrication practices by an approved inspection agency.

1.3 PRODUCT HANDLING

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A. Deliver of Materials:

Deliver, store and handle components in such a manner as to prevent damage to finished surfaces.

B. Storage of Materials:

Store components in a dry, clean location, away from uncured masonry and concrete. Cover with tarpaulin or polyethylene sheeting.

1.4 QUALITY ASSURANCE

A. Welding Standards:

Comply with applicable provisions of ASW D1.1 "Structural Welding Code- Steel" and ASW D1.3 "Structural Welding Code Sheet Steel."

B. Stair and railing fabricator shall be a certified member of AISC who participates in a recognized quality assurance program and who is regularly inspected by an independent testing/inspection agency.

1. In the absence of the above requirements, the fabricator shall be required to hire and pay for an independent testing/inspection agency approved by the Owner, to monitor fabrication and perform random testing of all stairs and railing fabrication procedures.

2. The fabricator shall submit evidence to the Owner indicating satisfactory completion of projects of similar scope and that fabrication facilities are adequate to meet production requirements.

B. Fabricator's Qualifications:

Only fabricators that maintain an agreement with an approved independent inspection or quality control agency to conduct periodic in-plant inspections at the fabricator's plant, at a frequency that will assure the fabricator's conformance to the requirements of the inspection agency's approved quality control program will be approved for this project.

1.5 TESTING AND INSPECTIONS

A. General:

Stair and railing materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified testing agency. Such inspections and tests shall not relieve the Contractor of responsibility for providing his own inspections, quality control and materials and fabrication procedures in compliance with specified requirements. Any non-compliant materials or fabricated components shall be removed and replaced.

B. The fabricator shall submit evidence of in-plant inspections in conformance with IBC "Structural Tests and Inspections- Inspection of Fabricators (1700).

C. Testing and inspection shall be formed as required by the building code, the Contract Documents or as otherwise directed by the Project Manager. The cost of field-testing and inspection shall be paid for by the Owner. If Work is found not to conform to the Contract Documents, the Contractor shall be responsible for the cost of all further testing.

D. The Contractor shall cooperate with and facilitate testing and inspection by the testing agency. The Contractor shall, at his own expense, furnish the testing agency stair and railing shop drawings.

E. Shop and field bolted connections and shop and field welded connections shall be inspected.

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1.6 STRUCTURAL PERFORMANCE

A. Handrails and Guardrails:

Engineer, fabricate, and install handrails and guardrails to comply with requirements of ASTM E985. ASTM E894 and to withstand the following structural loads without exceeding the allowable design working stress of the materials involved including anchors and connections. Apply each load to produce the maximum stress in each of component.

1. Handrails shall be rigid, free of vibration and able to withstand a concentrated force of 200 pounds applied at any point in any direction and, but not simultaneously, a uniform load of 50 pounds per foot applied in any direction.
2. Top Guardrails Member shall be rigid and able to withstand a concentrated force of 200 pounds applied at any point and in any direction and, but not simultaneously, a uniform load of 50 pounds per foot applied in any direction, and a simultaneous uniform load of 100 pounds per foot applied vertically downward to the top of the guard.
 - a. Infill areas of guardrails shall be rigid and able to withstand a horizontal concentrated force of 200 pounds applied on one square foot at any point in the system including panels, intermediate rails, balusters, or other elements. This loading condition shall not be applied simultaneously with the other loading conditions for guardrails.
 - b. Guardrail System shall withstand stresses resulting from railing system loads specified above.

B. Ladders:

Engineer, manufacture and install ladders to support in excess of 300 pounds force concentrated live load.

1.7 WARRANTIES

A. Ladders:

Provide manufacturer's standard product warranty for ladders against material and manufacturing defects for five (5) years.

B. Color Galvanizing:

Provide manufacturer's standard product warrant against excessive corrosion, peeling, chipping, or other failure for a period of twenty (20) years.

PART 2- PRODUCTS ("Green")

2.1 GENERAL

A. Note:

It is the Owner's intent to use energy conserving, environmentally friendly materials to the greatest extent practical. The Contractor is therefore encouraged to use recycled steel products.

B. Miscellaneous metal items shall be standard approved products, fabricated in accordance with best shop practices and, wherever possible, shop assembled, ready for erection.

C. Metals shall be free from defects impairing strength, durability, or appearance and shall be best commercial quality for purposes specified. Metals shall be made with structural properties to safely sustain and withstand strains, stresses, to which they will be normally subjected.

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D. Gauges herein specified are minimums and shall refer to U. S. Standard for sheet steel, plate iron, and steel.

2.2 MATERIALS

A. Steel Plates, Shapes and Bars:

ASTM A-36.

B. Sheet Steel:

Cold-rolled: ASTM A-366

Hot-rolled: ASTM A-569

C. Steel Tubing:

Cold-formed: ASTM A-500

Hot-formed: ASTM A-501

D. Steel Pipe:

ASTM A-53.

E. Fasteners:

Provide plated fasteners complying with ASTM A 240/A 666, Stainless Steel Type 316, for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

1. Bolts and Nuts:

ASTM A307, Grade A

ASTM A563.

2. Machine Screws:

ANSI B18.6.3.

3. Lag Bolts:

ANSI B18.2.1.

4. Plain Washers:

Round, carbon steel, ANSI B18.22.1.

5. Lock Washers:

Helical, spring type, carbon steel, ANSI B18.21.1.

6. Expansion Anchors:

Carbon steel components zinc-plated to comply with ASTM B633.

F. Note:

The fabricator shall no stamp, stencil, or otherwise place his identification on any portion of miscellaneous metals intended to remain exposed to view.

2.3 PAINTING AND PROTECTIVE COATING

A. General:

All ferrous metal that is not stainless steel herein specified shall be properly cleaned and shop primed, except at the following locations:

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1. Anchors that are built into masonry shall be coated with bituminous paint, unless specified to be galvanized.
2. Ferrous metal to be encased in concrete shall be left unpainted, unless specified or noted otherwise. Aluminum to be encased in concrete shall be coated with bituminous paint.
3. Where hot-dip galvanized metal is specified or shown, it shall not be shop primed.
4. Where sprayed-on fireproofing is specified or shown, metal shall not be shop primed.
5. Where metal is scheduled to receive ceramic tile finish it shall not be shop primed.

B. Surface Preparation:

1. Exterior steel shall meet requirements of the Steel Structures Painting Council, SS PC-SP6 Commercial Blast Cleaning Standard.
2. Interior steel and steel to be fireproofed shall meet requirements of SS PC-SP3 Power Tool Cleaning Standard.

C. Shop Primer for Ferrous Metal shall be Tnemec "37 H Chem Prime Universal Phenolic Primer," at 2.0-3.0 mils DFT.

D. For items that are not stainless steel. Galvanizing Repair Paint shall be high zinc content paint Tnemec 90-97.

E. Bituminous Paint shall be cold-applied mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

2.4 GALVANIZING

A. All exterior steel, including lintels, rails, bollards, grates, frames, and all other steel that has any portion exposed to the weather, shall be hot-dip galvanized. Interior steel shall be hot-dip galvanized where so noted or specified. Hot-dip galvanized products shall not be shop primed.

B. Products fabricated from rolled, pressed and forged steel shapes, plates, bars and strips shall be hot-dip galvanized in accordance with ASTM A-123, latest edition.

C. Iron and steel hardware shall be hot-dip galvanized in accordance with ASTM A-153, latest edition.

D. Assembled steel products shall be hot-dip galvanized in accordance with ASTM A-386, latest edition.

E. The weight of coating shall be as designated in ASTM "Comparison of Coating Weight Requirements for Hot-Dip Galvanized Products" in accordance with the class and thickness of material.

F. Where hot-dip galvanizing prior to completion of fabrication (cutting or welding operations) cannot be avoided, joints and cuts shall be finished with four (4) full coats of touch-up galvanizing repair paint as recommended by the fabricator.

G. Hot-dip galvanizing shall be done by a member of the American Galvanizers Association, Inc.

H. All hot-dipped galvanized material shall be stamped to indicate ASTM designation and ounces per square

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foot of zinc coating required by the Specifications.

- I. A notarized affidavit of compliance to the galvanizing specified shall be submitted from the galvanizer upon request.
- J. The galvanizing bath shall contain high grade zinc and other early materials. Immediately before galvanizing the steel shall be immersed in a bath of zinc ammonium chloride. The use of wet kettle process is prohibited.

2.5 SHOP COATING OF GALVANIZED STEEL

- A. The following miscellaneous metal components shall receive factory applied architectural finish over hot-dip galvanizing:
 - 1. All exterior rails.
 - 2. All exterior bollards.
- B. Finish shall be "Primergalv" by Duncan Galvanizing, or approved equal. Colors shall be selected by the Project Manager from the manufacturer's full range of available colors. Coating shall maintain a pull-off strength of 500 psi when tested in accordance with ASTM D4541.
 - 1. Factory-Applied Universal Primer:

Where galvanized steel is specified to receive a factory primer for field applied topcoat, provide factory-applied polyamide epoxy primer over specially prepared galvanized steel, 2.0 mils dry film thickness minimum. Apply primer within 12 hours after galvanizing at the galvanizer's plant in a controlled environment meeting applicable environmental regulations, and as recommended by the coating manufacturer.
 - 2. Factory-Applied High-Performance Architectural Finish:

Where galvanized steel is specified to receive a factory applied architectural finish, provide factory-applied polyurethane color coating, 2.5 mils dry film thickness minimum, over primed galvanized steel as previously referenced. Apply coating at the galvanizer's plant, immediately after the application of the prime coat, in a controlled environment meeting applicable environmental regulations, and as recommended by coating manufacturer.

2.6 ROOF BLOCKING FASTENING REQUIREMENTS

- A. Perimeter roof blocking shall be secured to decking, structural steel, spaced steel angles, or plates, as indicated on the Drawings.
- B. The Contractor shall provide additional steel angles and plates to suit specific job conditions.
- C. Where joist or beams do not extend out of roof edge, provide single or back-to-back steel angles or steel plates welded to perimeter steel beams in configurations indicated on the Drawings or otherwise required for support of blocking at 2'-0" O.C. intervals. Provide pre-drilled holes in steel for bolting of blocking at 24" O.C. with ½" bolts.

2.7 MASONRY WALL TOP CLIPS

- A. Provide steel clip angles at both sides of the tops of masonry walls secured to building structure, coordinate with the Work of Section 05100: Structural Steel. In general, size, spacing, and attachment of wall clips

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shall be determined by whether the wall is non-structural (architectural) or is a structural element (fire wall, load-bearing wall or shear wall for example) and shall be as indicated on the Drawings. Wall clips specified herein or partition top anchors specified in Section 04200: Unit Masonry and Mortar shall be provided for all masonry walls unless specifically indicated otherwise.

2.8 MISCELLANEOUS FRAMING AND SUPPORTS

- A. Provide steel framing and supports for applications indicated that are not a part of structural steel scope as required to complete the Work. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent construction. Fabricate from steel shapes, plates, and steel bars of welded construction using mitered joints for field connections. Cut, drill, and tap units to receive hardware, hangers, and similar items. Equip units with integrally welded anchors for casting into concrete or building into masonry.

2.9 EXPANSION JOINT COVERS

- A. Metal expansion joint covers shall be manufactured by Balco Inc., *CIS Construction Specialties*, MM Systems Corp., or approved equal.

2.10 LOOSE STEEL LINTELS

- A. Loose lintels shall be fabricated from A-36 steel from angles, shapes and masonry anchors of size and type scheduled for openings in masonry walls, unless otherwise indicated on the Drawings.
- B. All dimensions for locations of rails shall be field measured. Drawing dimensions shall be considered approximate and actual field conditions shall be ascertained before fabrication of rails.
- C. In general, heights of handrails shall be 2'-10" above step nosing. Heights of guardrails shall be 3'-6" above finish floor, unless otherwise noted on the Drawings. Handrails shall be mounted to provide 2-1/4" minimum clear space to walls or other surfaces at stairs and 1-1/2" minimum clear space at all other locations.
- D. Space intermediate balusters as indicated on the Drawings or as otherwise required providing maximum clear space between all members of less than four (4") inches. Guardrails shall not have an ornamental pattern that would provide a ladder effect. Space railing posts as indicated on the Drawings, and in accordance with railing engineering requirements.
- E. In general, handrails at stairs shall extend a minimum of 12" beyond the top riser and at least 12" plus the width of one tread beyond the bottom riser. At the top, the handrail extension shall be parallel to the working surface. At the bottom, the handrail shall continue to slope for a distance of the width of one tread from the bottom riser, with the remainder parallel to the walking surface.
- F. In general, handrails at ramps shall be parallel to the walking surface at all locations and shall extend a minimum of 12" beyond the top of the ramp and at least 12" beyond the bottom of the ramp.
- G. Steel Railing Fittings shall be as per Julius Blum and Co., or approved equal. All fittings for exterior use shall be galvanized. Fittings shall be:
 - 1. Weld on caps:
No. 938
 - 2. Round slip flanges:

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No. 611 and No. 1611

3. Wall returns:
No. 665 and No. 1665

4. Brackets:
No. 386 and No. 1386

PART 3- EXECUTION

3.1 VERIFYING CONDITIONS

- A. Coordinate all work with the work of other trades. Verify all field dimensions and that the work fits the work of other trades. Perform all cutting, fitting, and drilling required. Furnish all necessary templates and patterns required to build items into work of other trades. Provide holes and connections for the attachment of work of other trades.

3.2 GENERAL FABRICATION AND INSTALLATION

- A. Metal surfaces shall be clean and free from mill scale, flake rust, and rust pitting, well-formed and finished to shape and size, with sharp lines and angles and smooth surfaces. Shearing and punching shall leave clean true lines and surfaces. Weld or rivet permanent connections. Welds and flush rivets shall be finished flush and smooth on surfaces that will be exposed after installation. Welds shall be continuous unless otherwise noted. Welds shall not have voids or pockets and shall be ground to provide smooth transitions between metal surfaces. Do not use screws or bolts where they can be avoided; where used, heads shall be countersunk, screwed up tight and threads nicked to prevent loosening.
- B. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to weather shall be formed to exclude water. Provide holes and connections for the work of other trades.
- C. Castings shall be size determined by work type for which they form parts. Each member if possible shall be in one piece, make joints at moldings or fillets. Casting thickness shall be uniform, sufficient to ensure perfect workmanship, required strength for design use. Make castings clean, smooth, true to pattern, free from defects. Moldings, ornaments shall be rather more deeply cut than indicated to counteract flattening effects of casting, finishing; exactly reproduce form, feeling of models. Edges shall be sharp, come from molds clean, smooth, perfect.
- D. Non-slip surfaces shall be made safe for foot traffic with non-slip abrasive embedded uniformly in wearing surface at casting time.
- E. Connections and accessories shall be adequate to safely sustain, withstand stresses, strains, to which they will be normally subjected.
1. Connections to steel unless otherwise specified shall be steel.
 2. Connections to genuine wrought iron work shall be wrought iron or steel.
 3. Connections to cast iron, unless otherwise specified shall be steel.
 4. Bolts, nuts, screws for exterior work shall be electrogalvanized, unless otherwise noted.

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- F. Furnish all standard screws, bolts, washers, and other such fastening devices as are necessary for attaching this work to other materials. Anchors and other connecting devices required in concrete or masonry shall be built-in as the work progresses. **NOTE:** Special attention shall be given to the firm and secure anchoring of overhead mounted materials and equipment.
- G. Do cutting, punching, drilling, tapping required for attachment of other work coming in contact with miscellaneous metal where indicated or where directions for same are given prior to or with review of shop drawings.
- H. Unless otherwise indicated, bolt, and screw heads shall be flat countersunk in exposed faces of ornamental or finished character; elsewhere as required. Cut off bolts, screws, etc., where exposed, flush with nuts, or other adjacent metal. Except as otherwise required, weld shop-assembled connections; welds, bolts, or machine screws may be used for field connections. Exposed fastenings shall be the same materials, color, and finish as metal to which they apply, unless otherwise required.
- I. Make up threaded connections tightly so that threads will be entirely concealed by fittings.
- J. Work to be built in with masonry shall be of form required for anchorage, or be provided with suitable anchors, expansion shields, toggle bolts, etc. as required for proper anchorage. Fastening to wood plugs in masonry shall not be permitted.
- K. Install all supporting members, fastening, framing, hangers, bracing, brackets, straps, bolts, angles, and the like required to set, connect work rigidly and properly to structural steel, masonry, other construction.
- L. All items shall be installed plumb, straight, square, level and in proper elevation, plane, location and alignment with other work.

3.3 STEEL RAILING FABRICATION AND INSTALLATION

- A. Fabricate handrails and railing systems to comply with the requirements indicated for design, dimensions, details, finish, member sizes and anchorage but not less than that required to support structural loads.
- B. Interconnect railing and handrail members by butt-welding or welding with internal connectors, unless otherwise indicated. At tee and cross intersections, cope ends of intersecting members to fit contour of pipe to joined end and weld all around. Form changes in direction of railings by welding fabricated flush elbow fittings, by radius bends as indicated, or by flush radius bends. Remove burrs and splatter.
- C. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each configuration required. Maintain cylindrical cross section of pipe throughout the entire bend without buckling, twisting, cracking or otherwise deforming.
- D. For components exposed to exterior or moist environments, provide weep holes or other means of evacuating entrapped water. All exterior rails, fittings and brackets shall be hot-dipped galvanized after fabrication.
- E. Provide wall returns at all ends to adjacent surfaces and secure as required. Close exposed ends by welding 3/16" thick steel plate in place, except where clearance of end of pipe and adjoining wall surface is less than 1/4", or unless otherwise detailed.
- F. Welds shall be continuous and thoroughly fused without undercutting or overlap. Grind exposed welds smooth to form a uniformly smooth surface.

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- G. Provide miscellaneous steel for connection of rail supports as detailed on the Drawings. Do not support railing temporarily by any means that does not satisfy structural performance requirements.
- H. Set rails plumb and aligned. Set rails horizontal or parallel to rake of stairs. Support wall handrails on brackets, in accordance with railing engineering requirements. Space closer together if so indicated on the Drawings. Connect railing posts to stair framing by direct welding, unless otherwise indicated.
- I. Install handrail brackets away from handrail ends and finish ends with return fittings. Use drill-in expansion anchors at concrete or masonry walls. Mount handrails only on gypsum board assemblies that have been reinforced to receive railing anchors.
- J. Provide expansion joints in railings at intervals not to exceed forty (40') feet. Provide slip joints with internal sleeves extending two (2") inches beyond the joint on either side. Fasten the internal sleeve securely on one side only. Locate expansion joints within six (6") inches of posts.
- K. Where railings are to be set in concrete, railing posts shall be set in 6" matching sleeves as follows: Clean dust and foreign matter from sleeves. Moisten interior of hole and surrounding surface with clean water. Mix fast setting cement with water and stir until a smooth, creamy consistency is produced. Pour mixture into annular space until it overflows the hole. Taper cement away from rails to promote proper drainage. Wipe off excess, leaving a build-up of approximately 1/8".

3.4 LADDERS

- A. All ladders shall be installed in strict accordance with the manufacturer's instructions, the American Standard Safety Code for Fixed Ladders and all applicable OSHA regulations.
- B. Completed ladder installations shall be rigid and free from vibration.
- C. Ladders in elevator pits shall extend not less than 3'-6" above outside finish floor level as required by OSHA and shall be located as recommended by the elevator manufacturer.
- D. Exterior roof ladders shall extend no less than 3'-6" above parapet walls or upper roof surfaces as applicable, and shall have looped returns as required by OSHA. Rungs shall be held off a minimum of 9" off adjacent wall.
- E. Interior roof hatch ladders shall extend from the floor to the roof surface. Rails shall extend to just below the underside of the roof hatch.
- F. Ladders twenty (20') feet or more in height shall be provided with cage closures as required by OSHA.

3.5 EXPANSION JOINT COVERS

- A. Covers shall extend full width of openings.
- B. Covers shall be installed level, plumb, and flush with finish surfaces, and shall be fastened with anchor shields and bolts in strict confidence with the manufacturer's instructions and recommendations.
- C. Provide all corners, tees, transitions, etc., as required for a complete and proper job.
- D. Provide fire rated expansion joint covers with all required safing insulation and fire stopping at fire rated locations. Entire assembly shall be installed in strict accordance with the manufacturer's instructions and

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tested assemblies.

END OF SECTION

DIVISION 6- WOODS AND PLASTICS

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SECTION 06100 – ROUGH CARPENTRY

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

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PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Framing with dimension lumber.
2. Wood furring, grounds, nailers, and blocking.
3. Subflooring.
4. Underlayment.

1.3 DEFINITIONS

- A. Rough Carpentry:

Carpentry work not specified in other Sections and not exposed, unless otherwise specified.

1.4 SUBMITTALS

- A. General:

Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Product Data for the following products:

1. Underlayment.
2. Construction adhesives.

- C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.

- D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. For each type of preservative treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. For fire retardant treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.

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- E. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility for Fire-Retardant-Treated Wood:

Obtain each type of fire-retardant treated wood product from one source and by a single producer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.

1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2- PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers:

Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Wood-Preservative-Treated Materials:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.
 - f. Osmose Wood Preserving, Inc.
2. Fire-Retardant-Treated Materials, Interior Type A:
 - a. Baxter: J. H. Baxter Co.
 - b. Chemical Specialties, Inc.
 - c. Continental Wood Preservers, Inc.
 - d. Hickson Corp.
 - e. Hoover Treated Wood Products, Inc.

2.2 LUMBER, GENERAL

SECTION 06100 – ROUGH CARPENTRY

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A. Lumber Standards:

Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

B. Inspection Agencies:

Inspection agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority (Canadian).
3. RIS- Redwood Inspection Service.
4. SPIB - Southern Pine Inspection Bureau.
5. WCLIB- West Coast Lumber Inspection Bureau.
6. WWPA- Western Wood Products Association.

C. Grade Stamps:

Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

1. Provide dressed lumber, S4S, unless otherwise indicated.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

A. General:

Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWWA C2 (lumber) and AWWA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Do not use chemicals containing chromium or arsenic.

B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb./cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 18 inches (460 mm) above grade.
4. Wood floor plates installed over concrete slabs directly in contact with earth.

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- C. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWP A M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.4 FIRE-RETARDANT-TREATED MATERIALS

A. General:

Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWP A C20 (lumber) and AWP A C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Research or Evaluation Reports:

Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated.

B. Interior Type A:

For interior locations, use chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:

1. Bending strength, stiffness, and fastener-holding capacities are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions simulating installed conditions when tested by a qualified independent testing agency.
2. No form of degradation occurs due to acid hydrolysis or other causes related to treatment.
3. Contact with treated wood does not promote corrosion of metal fasteners.

2.5 DIMENSION LUMBER

A. General:

Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. Framing Other than Non-Load-Bearing Partitions:

Provide framing of the following grade and species:

1. Grade:
No. 2.
2. Species:
Southern pine; SPIB.
3. Species:
Mixed southern pine; SPIB.
4. Species:
Any species above.

2.6 MISCELLANEOUS LUMBER

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A. General:

Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content:

19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade:

For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No.3 Common grade per NELMA, NLGA, or WWPA; No.2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.7 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

A. General:

Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance-rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail (where applicable).

1. Thickness:

Provide panels meeting requirements specified but not less than thickness indicated.

2. Span Ratings:

Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."

B. Subflooring:

APA-rated sheathing.

1. Exposure Durability Classification: Exposure 1.

2. Span Rating: As required to suit joist spacing indicated.

2.8 STRUCTURAL-USE PANELS FOR UNDERLAYMENT

A. General:

Over smooth subfloors, provide underlayment not less than 1/4 inch (6.4 mm) thick. Over board or uneven subfloors, provide underlayment not less than 11/32 inch (8.7 mm) thick.

B. Plywood Underlayment for Carpet:

For underlayment under 19/32 inch (15.1 mm) thick, provide plywood panels with fully sanded face and as follows:

1. Grade:

APA Underlayment Interior.

2.9 FASTENERS

A. General:

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Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples:
FS FF-N-105.

C. Power-Driven Fasteners:
CABO NER-272.

D. Wood Screws:
ASME B18.6.1.

E. Lag Bolts:
ASME B18.2.1. (ASME B18.2.3.8M)

F. Bolts:
Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.11 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

PART 3- EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWWA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
 2. Published requirements of metal framing anchor manufacturer.
 3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."

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4. "Table 23-1-Q--Nailing Schedule" of the Uniform Building Code.
 5. "Table 2305.2--Fastening Schedule" of the BOCA National Building Code.
 6. "Table 1705.1--Fastening Schedule," of the Standard Building Code.
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.
- G. Use stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.
- H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to form work before concrete placement.
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FRAMING, GENERAL

- A. Framing Standard:
Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- B. Install framing members of size and at spacing indicated.
- C. Do not splice structural members between supports.

3.4 INSTALLATION OF STRUCTURAL-USE PANELS

- A. General:
Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
1. Comply with "Code Plus" provisions of above-referenced guide.
- B. Fastening Methods:
Fasten panels as indicated below:
1. Combination Subflooring-Underlayment:

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Glue and nail to framing throughout.

a. Space panels 1/8 inch (3 mm) at edges and ends.

2. Subflooring:

Glue and nail to framing throughout.

a. Space panels 1/8 inch (3 mm) at edges and ends.

3. Underlayment:

Nail to subflooring.

a. Space panels 1/32 inch (0.8 mm) at edges and ends.

END OF SECTION

SECTION 06402 – INTERIOR ARCHITECTURAL WOODWORK

Government of the Virgin Islands, Department of Public Works

PROJECT NAME

Project Location, U.S. Virgin Islands

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Shop finishing of woodwork.

- B. Related Sections:

The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for exposed framing and for furring, blocking, shims, and hanging strips for installing interior woodwork.
2. Division 8 Section "Flush Wood Doors" for doors specified by reference to architectural woodwork standards.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction prior to woodwork installation.

1.4 SUBMITTALS

- A. General:

Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

- C. Fire-retardant-treatment data for material treated to reduce combustibility. Include certification by treating plant that treated materials comply with requirements.

- D. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.

2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcing specified in other Sections.

- E. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

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A. Single-Source Responsibility for Fabrication and Installation:

Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this Section.

B. Quality Standard:

Except as otherwise indicated, comply with the following standard:

1. AWI Quality Standard:

"Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes, and other requirements.

- a. Provide AWI Certification Labels or Certificates of Compliance indicating that woodwork meets requirements of grades specified.

C. Fire-Test-Response Characteristics:

Provide materials with the following fire-test-response characteristics as determined by testing identical products per ASTM test method indicated below by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify fire-retardant-treated material with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

1. Surface-Burning Characteristics:

Not exceeding values indicated below, tested per ASTM E 84 for standard time period (10 minutes).

a. Flame Spread:

75.

b. Smoke Developed:

450.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.7 PROJECT CONDITIONS

A. Environmental Limitations:

Do not deliver or install woodwork until building is enclosed, wet work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Environmental Limitations:

Obtain and comply with woodwork fabricator's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized so that woodwork will be within plus

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or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.

C. Field Measurements:

Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.8 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2- PRODUCTS

2.1 MATERIALS

A. General:

Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:

1. Hardboard:
AHA A135.4.
2. Hardwood Plywood and Face Veneers:
HPVA HP-1.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General:

Where indicated, use materials impregnated with fire-retardant chemical formulations indicated by a pressure process or other means acceptable to authorities having jurisdiction to produce products with fire-test-response characteristics specified.

B. Fire-Retardant Chemicals:

Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.

C. Fire-Retardant-Treated Lumber:

Comply with the following:

1. Low-Hygroscopic Formulation: Interior Type A per AWWA C20.

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2. Mill lumber after treatment, within limits set for wood removal that does not affect listed fire-test-response characteristics, using a woodworking plant certified by testing and inspecting agency.
3. Kiln-dry material before and after treatment to levels required for untreated material.
4. Discard treated material that does not comply with requirements of referenced woodworking standard. Do not use twisted, warped, bowed, discolored, or otherwise damaged or defective material.
3. Available Products:
Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Low-Hygroscopic Formulation (Type A):
 - 1) D-Blaze; J. H. Baxter Co.
 - 2) D-Blaze; Chemical Specialties, Inc.
 - 3) Pyro-guard; Continental Wood Preservers, Inc.
 - 4) Dricon; Hickson Corp.
 - 5) Pyro-guard; Hoover Treated Wood Products, Inc.

2.4 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Screws:
Select material, type, size, and finish required for each use. Comply with ASME B 18.6.1 for applicable requirements.
- C. Nails:
Select material, type, size, and finish required for each use. Comply with FS FF- N-105 for applicable requirements.
- D. Anchors:
Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.5 FABRICATION, GENERAL

- A. Interior Woodwork Grade:
Provide interior woodwork complying with the referenced quality standard and of the following grade:
 1. Grade:
Custom.
- B. Wood Moisture Content:
Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

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2.8 SHOP FINISHING OF INTERIOR ARCHITECTURAL WOODWORK

A. Quality Standard:

Comply with AWI Section 1500, unless otherwise indicated- Custom Grade.

B. General:

The entire finish of interior architectural woodwork is specified in this Section, regardless of whether shop applied or applied after installation.

1. Shop Finishing:

To the greatest extent possible, finish architectural woodwork at the fabrication shop. Defer only final touch up, cleaning, and polishing until after installation.

C. General:

The priming and shop finishing (if any) of interior architectural woodwork required to be performed at the fabrication shop are specified in this Section. Refer to Division 9 Section "Painting" for final finishing of installed architectural woodwork and for material and application requirements of prime coats for woodwork not specified to receive final finish in this Section.

D. Preparations for Finishing:

Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Back priming:

Apply one coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of trim and ornamental work.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

A. Quality Standard:

Install woodwork to comply with AWI Section I700 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/16 inch in 96 inches (3 mm in 2,400 mm)

C. For plumb and level (including tops).

D. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood:

Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer, including those for adhesives used to install woodwork.

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- F. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- G. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.
- H. Refer to Division 9 Sections for final finishing of installed architectural woodwork.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

DIVISION 7-THERMAL AND MOISTURE PROTECTION

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SECTION 07410-MANUFACTURED ROOF AND WALL PANELS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes manufactured roof panels and wall panels of the following type:

1. Standing seam roof panels to be machine seamed

- A. Related Sections:

The following sections contain requirements that relate to this Section:

1. Division 5 Sections for structural and light gage framing
2. Division 7 Section "Flashing and Sheet Metal" for and/or wall flashing and other sheet metal work
3. Division 7 Section "Joint Sealants" for field-applied panel sealants

- C. Wood framing and decking are specified in a Division 6 Section.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide certified test results by a recognized testing laboratory or agency in accordance with specified test methods for each system.

- B. Air Infiltration:

Provide roof panel system with no air leakage when tested in accordance with ASTM E 283 at pressure differentials up to 1.57 psf.

- C. Water Penetration:

Provide panel systems with no water penetration as defined in the test method when tested in accordance with ASTM E 33 I at an inward static air pressure differential of not less than 6.24 psf and not more than 12.0 psf.

1.4 SUBMITTALS

- A. General:

Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

- B. Product data including manufacturer's product specifications, standard details, certified product test results, installation instructions, and general recommendations, as applicable to materials and finishes for each component and for total panel system.

- C. Samples for initial selection purposes in form of manufacturer's color charts or chips showing full range of colors, textures, and patterns available for roof and wall panels with factory applied finishes.

- D. Shop Drawings showing layouts of panels on walls and roofs, details of edge conditions, joints, corners,

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panel profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory and field assembly work.

1.5 QUALITY ASSURANCE

A. Fire Resistance Rating:

Provide panel systems that have been tested and listed by design no. in UL "Fire Resistance Directory" for 2-hr. assembly rating.

B. Wind Uplift:

Provide roof panel system including supports meeting requirements of Underwriters Laboratories, Inc. for Class 90 wind uplift resistance. Design wind speed to be 175 miles per hour, Exposure D, and Seismic Zone 4.

C. Field Measurements:

Where possible, prior to fabrication of panels, take field measurements of structure or substrates to receive panel system. Allow for trimming panel units where final dimensions cannot be established prior to fabrication.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver panels and other components so they will not be damaged or deformed. Package wall and roof panels for protection against transportation damage.

B. Handling:

Exercise care in unloading, storing, and erecting wall and roof covering panels to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal wall and roof panels so that they will not accumulate water. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.7 WARRANTY

A. Finish Warranty:

Furnish panel manufacturer's written warranty covering failure of the factory-applied exterior finish on metal wall and roof panels within the warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

1. Warranty period for factory-applied exterior finishes on wall and roof panels is 20 years after the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering metal roof or wall panel systems that may be incorporated in the work include but are not limited to the following:

1. Aluminum Roof and Wall Panels:

- a. AEP-Span

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- b. Allied Roof System
- c. Architectural Panels, Inc.
- d. Atas Aluminum Corp.
- e. Cheney Flashing Company
- f. ECI Building Components, Inc.
- g. Fashion, Inc.
- h. Flexospan
- i. Merchant & Evans, Inc. j. MM Systems Corp.
- k. Petersen Aluminum Corp.
- l. E. G. Smith Construction Products, Inc.
- m. Vin-Cor Steel Corp.

2.2 SHEET MATERIALS

A. Stainless Steel Sheet:

Comply with ASTM A 240, Type 304 with No. 4 Finish in accordance with ASTM A480.

B. Aluminum Sheets:

Comply with ASTM B 209 for Alclad alloy 3003 or 3004 with temper as required to suit forming operations.

1. Cladding:

Except as otherwise indicated, where aluminum sheets are exterior exposed without supplied coatings, provide special aluminum alloy-clad sheet known as "Alclad."

2.3 METAL FINISHES

A. General:

Apply coatings either before or after forming and fabricating panels, as required by coating process and as required for maximum coating performance capability. Protect coating either by application of strippable film or by packing plastic film or other suitable material between panels in a manner to properly protect the finish. Furnish air-drying spray finish in matching color for touch-up.

1. Color:

As selected by the Owner's Representative from the manufacturer's standard colors.

B. Fluoropolymer Coating:

Manufacturer's standard two-coat, thermo-cured, full-strength 70 percent "Kynar 500" coating consisting of a primer and a minimum 0.75-mil dry film thickness with a total minimum dry film thickness of 0.9 mil and 30 percent reflective gloss when tested in accordance with ASTM D 523.

1. Durability:

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Provide coating that has been field tested under normal range of weathering conditions for minimum of 20 years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of No. 8 in accordance with ASTM D 659; and without fading in excess of 5 NBS units.

2.4 THERMAL INSULATION

A. Polyisocyanurate Board Insulation:

Unfaced, preformed, rigid, cellular, polyurethane thermal insulation complying with ASTM C 591, Type 2 with aged R-values of 6.2 at 75 deg F (23.9 deg C).

2.5 MISCELLANEOUS MATERIALS

A. Gypsum Board:

Type X fire rated, UL-labeled board of thicknesses indicated, complying with ASTM C 442 or ASTM C 36.

B. Fasteners:

Self-tapping screws, bolts, nuts, self-locking rivets, self-locking bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

1. Use aluminum, corrosion-resistant steel, or stainless steel fasteners for exterior application and galvanized or cadmium-plated fasteners for interior applications.
2. Provide exposed fasteners with heads matching color of roof or wall panel by means of plastic caps or factory-applied coating.
3. Provide metal-backed neoprene washers under heads of exposed fasteners bearing on weather side of panels.
4. Locate and space exposed fasteners in true vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.

C. Felts:

Provide asphalt-saturated organic felts conforming to the requirements of ASTM D 226, Type II (No. 30).

D. Accessories:

Except as indicated as work of another specification section, provide components required for a complete roof or wall panel system, including trim, copings, fasciae, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

1. Closure Strips:

Closed-cell, self-extinguishing, expanded cellular rubber or cross linked polyolefin foam flexible closure strips. Cut or pre-mold to match configuration of roof and wall panels. Provide closure strips where indicated or necessary to ensure weathertight construction.

2. Sealing Tape:

Pressure-sensitive 100 percent solids polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, no sag, nontoxic, no staining tape.

3. Joint Sealant:

One-part elastomeric polyurethane, polysulfide, or silicone rubber sealant as recommended by the building manufacturer.

SECTION 07410-MANUFACTURED ROOF AND WALL PANELS

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

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E. Bituminous Coating:

Cold-applied asphalt mastic, SSPC paint 12, compounded for 15 mil dry film thickness per coat.

2.6 PANEL FABRICATION

A. General:

Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as required to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and dimensional requirements and with structural requirements.

B. Sound Control:

Where absorption requirement sound is indicated, fabricate interior liner panels with approximately 1,000 uniformly spaced 1/8-inch-diameter holes per sq. ft. Cover insulation with polyethylene film and provide inserts of wire mesh to form acoustical spacer grid.

C. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with substrate materials that are not compatible or could result in corrosion or deterioration of either material or finishes.

D. Fabricate panel joints with captive gaskets or separator strips, which provide a tight seal and prevent metal-to-metal contact in a manner that will minimize noise from movements within panel system.

2.7 ROOF AND WALL PANELS

A. Face Sheets:

Fabricate wall and roof panel face sheets to the profile or configuration indicated from 0.040-inch-thick 3003 or 3004 Alclad alloy embossed finish aluminum sheets.

B. Standing Seam Roof Panels:

Manufacturer's standard factory-formed standing-seam roof panel system designed for mechanical attachment of panels to roof purlin using a concealed clip. Form panels of 0.040-inch-thick 3003 or 3004 Alclad alloy embossed finish aluminum sheets.

1. Clips:

Provide 16-gage (0.0598-inch) 304 stainless steel panel clips designed to meet negative load requirements.

2. Cleats:

Factory-caulked, mechanically seamed cleats formed from 24-gage (0.0239-inch), 304 stainless steel sheets.

2.8 PANEL SUPPORTS AND ANCHORAGE

A. Secondary Framing:

Provide the following secondary framing members:

1. Roof Purlin and Wall Girts:

"C"- or "Z"-shaped sections fabricated from 16-gage (0.0598-inch) shop-painted, roll-formed steel. Purlin spacers shall be fabricated from 14-gage (0.0747-inch) cold-formed galvanized steel sections.

2. Eave Struts:

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Unequal flange "C"-shaped sections formed to provide adequate backup for both wall and roof panels. Fabricate from 16-gage (0.0598-inch) shop-painted, roll-formed steel.

3. Flange and Sag Bracing:

1-5/8- by 1-5/8-inch angles fabricated from 16-gage (0.0598-inch) shop-painted, roll-formed steel.

4. Base or Sill Angles:

Fabricate from 14-gage (0.0747-inch) cold-formed galvanized steel sections.

5. Secondary structural members, except columns and beams, shall be the manufacturer's standard sections fabricated from 14-gage (0.0747-inch) cold-formed galvanized steel.

PART 3 - EXECUTION

3.1 PANEL SUPPORTS AND ANCHORAGE

- A. Girts, purlin, and other secondary structural panel support members and anchorage shall be installed in accordance with AISC Manual of Steel Construction "Code of Standard Practice."

3.2 PANEL INSTALLATION

A. General:

Comply with manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.

1. Field cutting of exterior panels by torch is not permitted.
2. Install panels with concealed fasteners.
3. Install panels with exposed exterior and interior fasteners, prefinished to match panel finishes.
4. Install roof panels over minimum 3:12 pitch solid substrate with one ply of felt installed from lower edge up with at least 3-inch side laps and 4-inch end laps.

B. Accessories:

Install components required for a complete roof or wall panel system, including trim, copings, fasciae, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips, and similar items.

C. Joint Sealers:

Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel systems. Provide types of gaskets, sealants, and fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.

1. Provide weather seal under ridge cap. Flash and seal roof panels at eave and rake with rubber, neoprene, or other closures to exclude weather.
2. Refer to other sections of these specifications for product and installation requirements applicable to indicated joint sealers.

D. Joint Sealers:

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Refer to other sections of these specifications for post-installation requirements on joint sealers; not work of this section.

E. Lap-Seam Roof Panels:

Provide sealant tape at lapped joints of ribbed or fluted roof sheets and between roof sheets and protruding equipment, vents, and accessories.

1. Apply a continuous ribbon of sealant tape to clean, dry surface of the weather side of fastenings on end laps, and on side laps of corrugated nesting-type, ribbed, or fluted panels and elsewhere as needed to make roof sheets weatherproof to driving rains.

F. Standing Seam Roof Panel System:

Fasten roof panels to supports with concealed clip in accordance with the manufacturer's instructions.

1. Install clips at each support with self-drilling/self-tapping fasteners.
2. At end laps of panels, install tape caulk between panels.
3. Install factory caulked cleats at standing-seam joints. Apply snap on batten to the panels to provide a weathertight joint.
4. Seaming:
Complete seaming of panel joints by operation of portable power-driven equipment of type recommended by panel manufacturer to provide a weathertight joint.

G. Installation Tolerances:

Shim and align panel units within installed tolerance of 1/4 inch in 20'-0" on level/plumb/slope and location/line as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.3 CLEANING AND PROTECTION

A. Damaged Units:

Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures.

B. Cleaning:

Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

END OF SECTION

SECTION 07540 FLUID APPLIED ROOFING

Government of the Virgin Islands, Department of Public Works
TERRITORIAL GOVERNMENT ROOF REPLACEMENTS
St Thomas, St. Croix, St. John, Water Island, U.S. Virgin Islands

PART 1 - GENERAL

1.01 SUMMARY

A. Provide the following:

1. Fluid-applied roofing system and roof insulation.

1.02 SUBMITTALS

- A. Submit for approval samples, product data, warranty, test reports, maintenance data. Submit analysis of ballast size selected.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Listing:
UL Class C external fire exposure, and Class 175 mph wind uplift resistance.

1.04 WARRANTY

- A. Membrane Roofing Warranty:
Fluid-Applied Roofing Warranty:
Manufacturer's 15 year warranty

PART 2 - PRODUCTS

2.02 MATERIALS

- A. Manufacturers:
Enduris 3500 by GE
- B. Fluid Applied Roofing:
1. Type:
Fluid applied over concrete deck
 2. Membrane:
Elastomeric urethane, 45 mils
- C. Auxiliary Materials:
1. Flashing Sheets, Cant Strips, and Accessories:
Suitable for roofing application

PART 3 - EXECUTION

3.01 INSTALLATION

SECTION 07540 FLUID APPLIED ROOFING

Government of the Virgin Islands, Department of Public Works

TERRITORIAL GOVERNMENT ROOF REPLACEMENTS

St Thomas, St. Croix, St. John, Water Island, U.S. Virgin Islands

- A. Inspect substrate and report unsatisfactory conditions in writing. Beginning work means acceptance of substrate.
- B. Comply with roof system manufacturer's instructions and recommendations; clean, prime and prepare substrate.
- C. Begin roof installation only in presence of manufacturer's representative. Minimize seams and shingle overlaps to shed water.
- D. Where a hypalon surface coating is required to obtain fire and insurance ratings indicated, provide coating in strict compliance with manufacturer's instructions and recommendations. Provide two coats at a minimum rate of 1 gallon/100 sf/coat. Do not coat neoprene flashings.
- E. Install walkway protection over an additional layer of membrane at location indicated and where required to provide access to roof mounted equipment.
- F. Restore or replace damaged components. Protect work from damage.

END OF SECTION

SECTION 07620 FLASHING AND SHEET METAL

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER- ROOF REPAIRS

1&1A Golden Grove, Estate Golden Grove, St. Croix, U.S. Virgin Islands

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.02 SUMMARY

- A. This Section includes the following:

- 1) Built-in metal valleys, gutters, and scuppers
- 2) Gutters and downspouts (rain drainage)
- 3) Exposed metal trim/fascia units
- 4) Miscellaneous sheet metal accessories
- 5) Elastic expansion joints

- B. Roofing accessories installed integral with roofing membrane are specified in roofing system sections as roofing work.

- C. Roof accessory units of premanufactured, set-on type are specified in Division 7 Section "Roof Accessories."

1.03 SUBMITTALS

- A. General:

Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

- B. Product data, Flashing, Sheet Metal, and Accessories:

Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

- C. Samples of the following flashing, sheet metal, and accessory items:

- a) 12-inch-long samples of factory-fabricated products exposed as finished work. Provide complete with specified factor finish.

1.04 PROJECT CONDITIONS

- A Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

PART 2 - PRODUCTS

2.01 SHEET METAL FLASHING AND TRIM MATERIALS

SECTION 07620 FLASHING AND SHEET METAL

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

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A. Stainless Steel (07620.A):

AISI Type 302/304, complying with ASTM A 167, 2D annealed finish, soft, except where harder temper required for forming or performance; (20 gage) except as otherwise indicated.

B. Extruded Aluminum (07620.B):

Manufacturer's standard extrusions of sizes and profiles indicated, 60063-T52, AA-C22A41 clear anodized finish; 0.080-inch minimum thickness for primary legs of extrusions.

2.02 FABRICATED UNITS

A. General Metal Fabrication:

Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams:

Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

C. Expansion Provisions:

Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

D. Sealant Joints:

Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

E. Separations:

Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

F. Aluminum Extrusion Units:

Fabricate extruded aluminum running units with formed or extruded aluminum joint covers for installation behind main members where possible. Fabricate mitered and welded corner units.

2.03 ELASTIC EXPANSION JOINTS

A. General:

Provide factory-fabricated units of size and profile indicated complete with prefabricated corner units, intersection units, and splicing materials. Provide complete with elastic sheet flashing forming the primary joint membrane, in a supported, "bellows" arrangement designed for securement to both sides of expansion joints. Underside of bellows insulated with adhesively applied, flexible, closed-cell rubber or plastic not less than 3/8-inch thick.

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B. Type:

Metal flanged edges, 3 to 4 inches wide, formed to profiles as indicated to fit curbs and designed for nailing to curb substrate. Provide metal flanges in the following thicknesses:

- a) Zinc-coated steel:
22 or 24 gage
- b) Looped Bellows Width:
5 to 6 inches, exclusive of flanges

C. Available Manufacturers:

Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

- a) Afco Products, Inc.
- a) Celotex Corporation
- b) International Permalite/Roofing Components Group
- c) Manville/Roofing Systems Division
- d) Phoenix Building Products, Inc.
- e) York Manufacturing, Inc.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. General:

Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

B. Underlayment:

Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

D. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.

E. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

SECTION 07620 FLASHING AND SHEET METAL

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- F. Install elastic flashing in accordance with manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.
- G. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches O.C. Fabricate seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof system.
- H. Install continuous gutter guards on gutters, arranged as hinged units to swing open for cleaning gutters. Install "beehive"-type strainer-guard at conductor heads, removable for cleaning downspouts.

3.02 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Protection:
Advise contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

SECTION 07720 – ROOF ACCESSORIES

GOVERNMENT OF THE U. S. VIRGIN ISLANDS, DEPARTMENT OF CORRECTIONS

GOLDEN GROVE ADULT CORRECTIONAL FACILITY AND DETENTION CENTER-
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PART I. GENERAL

1.1-RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2- SUMMARY

A. Section Includes:

1. Equipment supports
2. Hatch-type heat and smoke vents
3. Gravity ventilators
4. Pipe and duct supports
5. Pipe portals
6. Preformed flashing sleeves

B. Related Sections:

1. Section 055000 "Miscellaneous Metal Work"
2. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.

1.3-COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leak proof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4- ACTION SUBMITTALS

A. Product Data:

1. For each type of roof accessory.
Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings:

1. For roof accessories.
Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

SECTION 07720 – ROOF ACCESSORIES

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C. Samples:

1. For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

D. Delegated-Design Submittal:

1. For equipment supports and walkways indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Detail mounting, securing, and flashing of roof-mounted items to roof structure. Indicate coordinating requirements with roof membrane system.
3. Wind-Restraint Details:
Detail fabrication and attachment of wind restraints. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.

1.5- INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

B. Sample Warranties: For manufacturer's special warranties.

1.6- CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. For roof accessories to include in operation and maintenance manuals.

1.7- WARRANTY

A. Special Warranty on Painted Finishes:

1. Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.

B. Fluoropolymer Finish:

Deterioration includes, but is not limited to, the following:

1. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

SECTION 07720 – ROOF ACCESSORIES

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- D. Finish Warranty Period:
15 years from date of Substantial Completion.

PART II. PRODUCTS

2.1- PERFORMANCE REQUIREMENTS

- A. General Performance:
- B. Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- C. Delegated Design:
1. Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design equipment supports to comply with wind performance requirements, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- D. Sustained Wind-Restraint Performance:
1. 175 mph

2.2- EQUIPMENT SUPPORTS

- A. Equipment Supports:
1. Internally reinforced perimeter Rail type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, stepped integral metal cant raised the thickness of roof insulation, and integrally formed structure-mounting flange at bottom.
- B. Basis of Design Product:
Subject to compliance with requirements, provide product by one of the following:
1. Adaptable Air Products
 2. AES Industries, Inc.
 3. Air Balance Inc.; a division of Mestek, Inc.
 4. Conn-Fab Sales, Inc.
 5. Custom Solution Roof and Metal Products.
 6. Greenheck Fan Corporation.
 7. KCC International, Inc.

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8. Lloyd Industries.
9. Milcor Inc.; Commercial Products Group of Hart & Cooley, Inc.
10. Pate Company (The).
11. Plenums Incorporated.
12. Roof Products and Systems (RPS); a division of Hart & Cooley, Inc.
13. Roof Products, Inc.
14. Thybar Corporation.

C. Size:

1. Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

D. Supported Load Capacity:

1. Coordinate load requirements with items being supported by equipment supports

E. Material:

1. Stainless-steel sheet, 0.078 inch (1.98 mm) thick.

F. Finish:

1. Manufacturer's standard.

G. Construction:

1. Liner:
Same material as equipment support, of manufacturer's standard thickness and finish.
2. Nailer:
Factory-installed continuous wood nailers 3-1/2 inches (90 mm) wide on top flange of equipment supports, continuous around support perimeter.
3. Wind Restraint Straps and Base Flange Attachment:
Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
4. Platform Cap:
Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch (19-mm) thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.

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5. Metal Counterflashing:

- a. Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
- b. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
- c. Fabricate equipment supports to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.

6. Sloping Roofs:

- a. Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.

2.3- HEAT AND SMOKE VENTS

A. Hatch Type Heat and Smoke Vents:

1. Manufacturer's standard, with single walled insulated curbs, welded or mechanically fastened and sealed corner joints, integral condensation gutter, and cap flashing. Fabricate with insulated double-walled lid and continuous weathertight perimeter lid gaskets, and equip with automatic self-lifting mechanisms and UL-listed fusible links rated at 165 F (74 C) fire-suppression system.

B. Basis of Design Product:

Subject to compliance with requirements, provide product by one of the following:

1. Babcock-Davis.
2. Bilco Company (The).
3. Bristolite Daylighting Systems, Inc

C. Type and Size:

1. Double-leaf lid, 72 by 96 inches (1830 by 2440 mm)

D. Loads:

1. Minimum 60-lbf/sq. ft. (2.9-kPa) external live load and internal hurricane uplift load.
 - a. When release is actuated, lid shall open against 20-lbf/sq. ft. (0.95-kPa) wind load and lock in position.

E. Heat and Smoke Vent Standard:

SECTION 07720 – ROOF ACCESSORIES

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1. Provide units that have been tested and listed to comply with UL793.

F. Curb, Framing, and Lid Material:

1. Aluminum zinc alloy coated steel sheet.
 - a. Thickness:
0.079 inch (2.01 mm)
 - b. Color:
As indicated by manufacturer's designations.
2. Aluminum sheet.
 - a. Thickness:
0.079 inch (2.01 mm)
 - b. Finish:
Two-coat fluoropolymer
 - c. Color:
Light bronze

G. Construction:

1. Insulation:
 - a. Cellulosic-fiber board
 - i. R-Value: 12.0 according to ASTM C 1363.
2. Nailer:
 - a. Factory-installed wood nailer continuous around hatch perimeter.
3. Hatch Lid:
 - a. Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
4. Fabricate curbs to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.
5. Sloping Roofs:
 - a. Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.

2.4- PIPE AND DUCT SUPPORTS

A. Fixed-Height Cradle-Type Pipe Supports:

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1. Polycarbonate pipe stand accommodating up to 1-1/2 inch (38 mm) diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

B. Fixed-Height Roller-Bearing Pipe Supports:

1. Polycarbonate pipe stand with stainless-steel roller carrying assembly accommodating up to 7 inch (178 mm) diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

C. Adjustable-Height Structure-Mounted Pipe Supports:

1. Extruded-aluminum tube, filled with urethane insulation; 2 inches (50 mm) in diameter; accommodating up to 7-inch (178-mm) diameter pipe or conduit, with provision for pipe retainer; with aluminum baseplate, EPDM base seal, manufacturer's recommended hardware for mounting to structure or structural roof deck as indicated, stainless-steel roller and retainer, and extruded-aluminum carrier assemblies; as required for quantity of pipe runs and sizes.

D. Curb-Mounted Pipe Supports:

1. Galvanized steel support with welded or mechanically fastened and sealed corner joints integral metal cant, and integrally formed deck-mounting flange at perimeter bottom; with adjustable-height roller-bearing pipe support accommodating up to 20-inch (508-mm) diameter pipe or conduit and with provision for pipe retainer; as required for quantity of pipe runs and sizes.
2. Manufacturers:
 - a. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - i. MIRO Industries, Inc.
 - ii. Pate Company (The).
 - iii. PHP Systems Design
 - iv. Thaler Metal Industries Ltd.

E. Duct Supports:

1. Extruded-aluminum, urethane-insulated supports, 2 inches (50 mm) in diameter; with manufacturer's recommended hardware for mounting to structure or structural roof deck.
2. Manufacturers:

Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

 - a. Eberl Iron Works, Inc.
 - b. Thaler Metal Industries, Ltd.

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3. Finish:

- a. Manufacturer's standard.

2.5- PIPE PORTALS

A. Flashing Pipe Portal:

1. Formed aluminum membrane-mounting flashing flange and sleeve with collared opening and pressure-sealed conically shaped EPDM protective rubber cap sized for piping indicated, with stainless-steel snap lock swivel clamps.
2. Manufacturers:
Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Roof Products and Systems (RPS); a division of Hart & Cooley, Inc.

2.6-PREFORMED FLASHING SLEEVES

A. Exhaust Vent Flashing:

1. Double-walled metal flashing sleeve or boot, insulation filled, with integral deck flange, 12 inches (300 mm) high, with removable metal hood and slotted metal collar.
2. Manufacturers:
Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Custom Solution Roof and Metal Products.
 - b. Thaler Metal Industries, Ltd.
3. Metal:
Aluminum sheet, 0.063 inch (1.60 mm)
4. Diameter:
4 inches (100 mm)
5. Finish:
Manufacturer's standard

B. Vent Stack Flashing:

1. Metal flashing sleeve, uninsulated, with integral deck flange.
2. Manufacturers:
Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Custom Solution Roof and Metal Products.

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- b. Lifetime Tool & Building Products, LLC.
 - c. Milcor; Commercial Products Group of Hart & Cooley, Inc.
 - d. Thaler Metal Industries, Ltd.
3. Metal:
Aluminum sheet, 0.063 inch (1.60 mm) thick
4. Height:
7 inches (175 mm)
5. Diameter:
As matched in the field
6. Finish:
- a. Manufacturer's standard
 - b. Zinc-Coated (Galvanized) Steel Sheet:
 - i. ASTM A 653/A 653M, G90 (Z275) coating designation
 - c. Exposed Coil-Coated Finish:
 - i. Painted by the coil-coating process to comply with ASTM A 755/A 755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - d. Two-Coat Fluoropolymer Finish:
 - i. AAMA 621. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.
- C. Concealed Finish:
- 1. Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).
 - 2. Aluminum-Zinc Alloy-Coated Steel Sheet:
 - a. ASTM A 792/A 792M, AZ50 (AZM150) coated.
 - 3. Exposed Coil-Coated Finish:

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- a. Painted by the coil-coating process to comply with ASTM A 755/A 755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

4. Two-Coat Fluoropolymer Finish:

- a. AAMA 621. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.

D. Concealed Finish:

1. Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).

E. Aluminum Sheet:

1. ASTM B 209 (ASTM B 209M), manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
2. Exposed Coil-Coated Finish:
 - a. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Two-Coat Fluoropolymer Finish:
 - a. AAMA 2605. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.
4. Concealed Finish:
 - a. Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).

F. Aluminum Extrusions and Tubes:

1. ASTM B 221/ASTM B 221M, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.
2. Stainless-Steel Sheet and Shapes:
 - a. ASTM A 666, Type 304.
3. Steel Shapes:
 - b. ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

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4. Steel Tube:
 - a. ASTM A 500/A 500M, round tube.
5. Galvanized-Steel Tube:
 - b. ASTM A 500/A 500M, round tube, hot-dip galvanized according to ASTM A 123/A 123M.
6. Steel Pipe:
 - c. ASTM A 53/A 53M, galvanized.

2.7- MISCELLANEOUS MATERIALS

A. General:

1. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Wood Nailers:

1. Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPAC2; not less than 1-1/2 inches (38 mm) thick.

C. Bituminous Coating:

1. Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

D. Underlayment:

1. Felt:
ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, non-perforated.
2. Polyethylene Sheet:
6-mil (0.15-mm) thick polyethylene sheet complying with ASTM D 4397.
3. Slip Sheet:
Building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum, rosin sized.
4. Self-Adhering, High-Temperature Sheet:
Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

E. Fasteners:

Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide

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nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel:
Series 300 stainless steel according to ASTM A 153/A 153M.
2. Fasteners for Aluminum Sheet:
Series 300 stainless steel.
3. Fasteners for Stainless-Steel Sheet:
Series 300 stainless steel.

F. Gaskets:

1. Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

G. Elastomeric Sealant:

1. ASTM C 920, elastomeric polyurethane or silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

2.8-GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART III. EXECUTION

3.1- EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2- INSTALLATION

A. General:

1. Install roof accessories according to manufacturer's written instructions.

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- 2.
3. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
4. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
5. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
6. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection:

1. Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
2. Coat concealed side of stainless-steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
3. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
4. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Equipment Support Installation:

1. Install equipment supports so top surfaces are level with each other

D. Heat and Smoke Vent Installation:

1. Install heat and smoke vent so top perimeter surfaces are level.
 - a. Install and test heat and smoke vents and their components for proper operation according to NFPA 204.

E. Pipe Support Installation:

1. Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.
2. Pipes of Various Sizes:
 - a. Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.

F. Preformed Flashing Sleeve and Flashing Pipe Portal Installation:

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1. Secure flashing sleeve to roof membrane according to flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane according to roof membrane manufacturer's instructions.

3.3- REPAIR AND CLEANING

A. Galvanized Surfaces:

1. Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting.

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Clean off excess sealants.

1. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION

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PART I. GENERAL

1.1- SUMMARY

A. Related Documents:

1. General provisions of the Contract apply to this Section.
2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:

1. Firestops for sealing penetrations through fire rated floors and walls
2. Standards and specifications for fire stopping work
3. Firestop work shall conform to the requirements of this Section, but is a part of the section covering the actual penetration.

C. Related Sections:

1. Division 01 Section "General Requirements."
2. Division 01 Section "Special Procedures."
3. Division 07 Section "Expansion Control":
Expansion Joint Covers
4. Division 07 Section "Blanket Insulation"
5. Division 07 Section "Joint Sealants"
6. Divisions 21, 22, 23, and 26 for coordination with fire suppression, plumbing, HVAC and electrical work.

1.2- REFERENCES

A. General:

1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials

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2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials

3. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems

C. BAAQMD Regulation 8-51 - Adhesive and Sealant Products

1. IBC - International Building Code, Chapter 7

2. Federal Specification HH-I-521F - Insulation Blankets, Thermal (Mineral Fiber, for Ambient Temperature)

3. NEC - Nation Electrical Code

4. NFPA 70

5. UL Fire Resistance Directory

D. UL 1479 - Fire Tests of Through-Penetration Firestops

1.3- SYSTEM DESCRIPTION

A. Specified fire stopping systems are based on a solid sealant only, or combinations of solid sealant, foam sealant, and refractory fibers of thickness required to attain hour ratings.

B. Systems shall:

1. Provide a flexible seal to prevent passage of fire, smoke, toxic gases and water through openings, and prevent transmission of sound and vibration from the penetrating element to the structure.

2. Provide hour ratings indicated and in accordance with ASTM E 814 or UL 1479

3. Comply with requirements of IBC Sections 709 and 710, and IBC Standards.

1.4- SUBMITTALS

A. Submit under provisions of Division 01 Section "General Requirements."

B. Product Data:

1. Manufacturer's specifications, product data, material safety data sheets, and installation instructions for each type of installation required, listing specific materials proposed.

C. Shop Drawings:

1. Manufacturer's detail drawings and applicable UL system numbers for fire stop systems to be installed.

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D. Samples:

1. Samples of each item when requested by Project Manager.

E. Manufacturer's Recommendations:

1. Manufacturer's written recommendations for installations or configurations not covered by a UL-listed fire stop system.

F. Test Reports:

1. Manufacturer's published test reports. Include manufacturer's system number and UL listing for each type of penetration.

G. Certification:

1. Manufacturer's written certification that fire stopping system(s) furnished comply with UL system requirements, are approved for each specific condition of use on the Project.

H. Closeout Submittals:

1. Sealant and adhesive quantity use is in accordance with requirements of BAAQMD Regulation 8-51.
2. Written guarantee

1.5- QUALITY ASSURANCE

A. Fire stopping systems shall be the products of one manufacturer. Coordinate the work of the trades toward achieving this end.

B. Installer Qualifications:

1. Firm experienced in installation or application of systems similar in complexity to those required by this Project, and acceptable to or licensed by the product manufacturer.

C. Regulatory Requirements:

1. Products shall be 100% asbestos and PCB free.

D. Mock-Ups:

1. Seal one floor and one wall opening as directed and under fire stopping manufacturer's supervision, to show complete system and to verify installation methods and procedures.

1.6- DELIVERY, STORAGE AND HANDLING

A. Deliver fire stopping materials to job site in factory sealed, unopened containers bearing manufacturer's name, brand, product designation, batch number and packaging date.

B. Store in unopened containers. Follow manufacturer's recommendations for storage temperatures and shelf life.

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- C. Follow manufacturer's recommendations for handling products containing toxic materials. Use recommended solvents and cleaning agents for cleaning tools, equipment and skin.

1.7- PROJECT CONDITIONS

A. Environmental Requirements:

1. Furnish adequate ventilation if using solvent.
2. Furnish forced air ventilation during installation if required by manufacturer.
3. Keep flammable materials away from sparks or flame.
4. Provide masking and drop cloths to prevent contamination of adjacent surfaces by fire stopping materials.
5. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of fire stopping.

B. Existing Conditions:

1. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding. Proceed with installation only after penetrations of substrates have been completed and supporting brackets installed.

1.8- GUARANTEE

A. Written guarantee:

1. Agree to repair or replace fire stopping which fails in joint adhesion, co-adhesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability, or appears to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.

PART II. PRODUCTS

2.1 - MANUFACTURERS

A. Manufacturers:

1. 3M
2. Hilti
3. Nelson
4. or as otherwise specified

B. Established Standard:

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1. Unless otherwise specified, 3M products are specified to establish standards and type of materials required. Equal products of manufacturers specified above are acceptable.

2.2 - MATERIALS

A. Sealant:

1. Select among the following materials as appropriate.
 - a. 1. Solid (Elastomeric):
3M Fire Barrier Premium Latex CP 25WB+ Caulk, one-component elastomeric water-based latex sealant designed for use as a through penetration firestop.
 - b. Foam:
3M Fire Barrier 2001 Silicone RTV Foam, two-component silicone elastomer foam-in-place sealant designed to fill irregular or complex voids.
 - c. Wrap Strip:
3M Fire Barrier FS-195+ Wrap Strip, fire resistive strip designed to be wrapped around the penetrating item and secured in place.
 - d. Restricting Collar:
3M Fire Barrier RC-1 Restricting Collar, sheet metal, designed for use with wrap strip in combustible through-wall firestop penetration systems.
 - e. Composite Sheet:
3M Fire Barrier CS-195+ Composite Sheet, elastomeric layer reinforced with mesh restraining wire and covered with aluminum foil on one side and bonded to sheet metal, forming a fire resistive sheet.
 - f. Putty:
3M Fire Barrier MP Moldable Putty+ Pads and Sticks, one-component elastomeric formable putty, designed for use as a through-penetration firestop system.
 - g. Spray:
3M FireDam Spray 100, flexible water-based coating
 - h. Primers:
As recommended by sealant manufacturer

B. Pillows:

1. Nelson PLW Firestop Pillow, Hilti FS Fire Block, dust proof chemical resistant cloth with heat-reactive expanding solidifying fill, designed for large openings that require frequent cable alterations.

C. Safing Insulation:

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1. USG "Thermafiber Safing Insulation", 4 lb density mineral wool insulation unless indicated otherwise

D. Damming Materials:

1. As recommended by firestop manufacturer

PART III. EXECUTION

3.1- CONDITION OF SURFACES

- A. Inspect surfaces to receive fire stopping materials and report any defects to Project Manager. Do not start work until defects have been corrected. Starting work implies acceptance of surfaces as satisfactory.
- B. Unless otherwise permitted by manufacturer, do not apply fire stopping materials to polycarbonates; materials that bleed oils, plasticizers or solvents; organo-metallic compounds; silicone rubber containing organo-tin compound; sulfur, polysulfides, polysulfones and other sulfur containing materials; amines, urethanes and amine-containing materials; and unsaturated hydrocarbon plasticizers.
- C. Do not apply materials in confined spaces where material is not exposed to atmospheric moisture.

3.2 - PREPARATION

- A. Thoroughly clean surfaces and spaces to receive fire stopping materials, removing foreign matter such as dirt, dust, moisture, rust, laitance, mill scale, oil, paint, lacquer, form coatings, water repellents and protective coatings.
- B. Do not use cleaning solvents which leave residue. Wipe joints free of solvent using clean, dry white cloths or white lintless paper. Do not use alcohol or alcohol based materials. Do not permit solvent to air dry. Do not use detergents or soap and water solutions for cleaning unless specifically recommended by the sealant manufacturer.
- C. Follow manufacturer's directions for specific products and surfaces.

3.3 - MIXING

- A. Job mix foam sealants in accordance with manufacturer's directions using approved equipment.
- B. Stir separate parts of multi-component sealants until settled fillers and pigments and any surface liquid are thoroughly dispersed.
- C. Combine separate parts in accordance with mixing instructions.

3.4 - INSTALLATION

- A. Install systems in accordance with UL systems, and manufacturer's specifications and recommendations, using approved equipment and so as to achieve the required fire rating.
- B. Surface Preparation:
 1. Prepare surfaces as recommended by manufacturer immediately prior to installation of fire stopping materials. If primers are used, make preliminary tests to ensure that primers will not stain exposed materials.

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C. Masking:

1. Mask surrounding areas where necessary to prevent stains on exposed finished surfaces. Do not apply masking to surfaces which are to receive sealant materials. Remove masking immediately following completion of sealant work.

D. Damming:

1. Form leak-proof dams as required to seal openings and contain sealant materials until cure is complete. Follow sealant manufacturer's recommendations.

E. Sealing:

1. Solid Sealant:

- a. For small spaces and where exposed to view in wall face. Immediately tool completed seal to slightly concave surface using recommended tooling agent.

2. Foam:

- a. Use automatic metering, mixing, and dispensing equipment for large volume applications; factory prepared cartridges may be used for small volumes.
- b. In general, use foam sealant for all applications except where solid sealant is permitted.
- c. When sealant has cured, neatly trim excess where exposed to view.

3. Spray:

- a. Install in accordance with manufacturer's recommendations and requirements for specific use.

3.5 - FIELD QUALITY CONTROL

- A. Perform manufacturer's quality control check program at least once daily and upon changing to new lot of materials.
- B. Inspect cured seals after 24 hours by removing damming materials to examine seals. Replace dams where a required part of assembly.
- C. Where voids occur, fill with freshly mixed foam or solid sealant. Re-inspect after added material has cured 24 hours.
- D. Ensure that cured foam sealants show acceptable or better color and cell structure range per manufacturer's recommendations.
- E. Remove unacceptable sealants and replace with new.

3.6 - CLEANING

1. Clean adjacent surfaces soiled by fire stopping work.

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3.7 - SCHEDULE

A.	Location	Fire Rating
1.	Corridor fire walls	1 hour
2.	Floors	2 hour
3.	Shaft enclosures	2 hour
4.	Occupancy Separation Walls	1 hour
5.	Area Separation Walls	2 hour

END OF SECTION

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PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. The sealing of joints indicated on schedule at the end of this section.
2. The sealing of exterior joints, including:
 - a. Exterior face of building expansion joints.
 - b. Panel joints.
 - c. Coping joints.
 - d. Joints around perimeter of frame.
3. The sealing of interior joints including:
 - a. Joints around perimeter of frame.
 - c. Control joints in plaster.
 - d. Control joints in gypsum board.
 - e. Control joints in emu walls.

B. Joints of a nature similar to that of joints indicated on the schedule shall be sealed with the same sealer, whether indicated on drawings to be sealed or not.

1. Related Sections:

- a. Fire stopping/smoke stopping sealers:
Elsewhere in Division 7
- b. Joint sealers in roofing work:
Elsewhere in Division 7
- c. Joint sealers in waterproofing work:
Elsewhere in Division 7

1.02 REFERENCES

- A. ASTM C 719-93 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle); 1993.
- B. ASTM C 834-95- Standard Specification for Latex Sealants; 1995.
- C. ASTM C 920-95- Standard Specifications for Elastomeric Joints Sealants 1995.

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- D. ASTM C 1193-91- Standard Guide for Use of Joint Sealants; 1991.
- E. ASTM D 3405-78 - Standard Specification for Joint Sealants, Hot-poured for Concrete and Asphalt Pavements; 1978.
- F. ASTM D 3406-85(91) - Standard Specification for Joint Sealant, Hot-Applied, Elastomeric -Type, for Portland cement Concrete Pavements 1985 (Reapproved 1991).
- G. FS A-A-272- Caulking Compounds; 1980.
- H. FS SS-S-200E- Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold-Applied, for Portland cement Concrete Pavement; 1984 (Amended 1988).

1.03 DEFINITIONS

A. Substrates:

- 1. M-type substrates:
Concrete, concrete masonry units, brick, mortar and natural stone. The term "masonry" means brick, stone, and concrete masonry work.
- 2. G-type substrates:
Glass and transparent plastic glazing sheets
- 3. A-type substrates:
Metals, porcelain, glazed tile, and smooth plastics
- 4. O-type substrates:
Woods, unglazed tile; substrates not included under other categories

1.04 SUBMITTALS

A. Product Data:

- B. Manufacturer's data on each joint sealer, with instruction for substrate preparation and installation.

B. Samples for Color Selection:

- C. Cured samples of actual products showing manufacturer's full range of colors. (Products exposed to view only).

C. Certified Product Test Reports:

- D. Independent testing agency reports showing compliance with all specified requirements.
- 1. Reports may be on tests conducted up to 24 months before submission, provided the products tested were aged specimens of the same formulation as that to be used.

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D. Field Installation Test Reports.

E. Certificates:

For each sealer, provide manufacturer's certificates stating that the product complies with the specifications and is appropriate for the use it is being put to.

F. Installer's Preconstruction Inspection Report:

List all conditions detrimental to performance of joint sealer work.

1.05 QUALITY ASSURANCE

A. Field Installation Tests:

Before installation, test the adhesion of all sealers to actual substrates.

1. Seal at least 5-foot lengths of joints and cure properly. Try to pull sealer out of joint by hand, by method recommended by sealer manufacturer.
2. Select test joint representative of joints to be sealed by the product to be tested.
3. Perform tests for each type of sealer used on exterior and each type of elastomeric sealant used on interior.
4. Do tests in the presence of the Project Manager.
5. Report acceptable results only.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original containers or bundles with labels showing manufacturer, product name or designation, color, shelf life, and installation instructions.

1.07 PROJECT CONDITIONS

A. Environmental Limitations:

Do not install sealers if any of the following conditions exist.

1. Air or substrate temperature exceeds the range recommended by sealer manufacturers.
2. Substrate is wet or damp.

B. Dimensional Limitations:

Do not install sealers if joint dimensions are less than or greater than that recommended by sealer manufacturer; notify alternative procedures.

1.08 WARRANTY

A. Submit written warranty signed by Contractor and installer guaranteeing correct failures in sealer work that occur within 10 years after substantial completion, without reducing or otherwise limiting any other rights to correction which the owner may have under the contract documents. Failure is defined as failure to remain weathertight due to faulty materials or workmanship. Correction is limited to replacement sealers.

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PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

A. General:

Provide only products which are recommended and approved by their manufacturer for the specific use to which they are put and which comply with all requirements of the contract documents.

1. For each generic product, use only materials from one manufacturer.
2. Provide only materials which are compatible with each other and joint substrates.
3. Colors of exposed sealers:
As selected by the Owner's Representative from manufacturer's standard colors

2.02 ELASTOMERIC SEALANTS

A. Elastomeric Sealants General:

Chemically curing elastomeric sealants types indicated, complying with ASTM C 920, including specific type, Grade, Class, and Uses indicated, as well as all other requirements specified.

1. For M-type substrates:
Comply with requirements for Use M
2. For G-type substrates:
Comply with requirements for Use G
3. For A-type substrates:
Comply with requirements for Use A
4. For 0-type substrates:
Comply with requirements for Use M. (minimum) and use 0 for the particular substrate.

B. Two-Part Pourable Polysulfide Sealant:

Type M, Grade P, Class 12-1/2 T

C. Medium Movement Silicone Sealant:

One- or two-part non-acid-curing, Grade NS, Class 25, Use NT, plus movement capability of more than 25 percent but less 50 in both extension and compression.

D. Silicone Sealant for Use T:

One-part, non-acid-curing, Grade NS, Class 25, Use T, Use M, plus movement capability of 50 percent in both extension and compression.

E. Multipart Pourable Urethane Sealant:

Type M, Grade P, Class 25, Use T

F. No sag Urethane Sealant for Use T:

Type S or M, Grade NS, Class 25, Use T

G. One-part No sag Urethane Sealant:

Type S, Grade P, Class 25, Use T

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2.03 PAVING JOINT SEALANTS

- A. Two-Part Urethane Paving Sealant: Pourable, chemically curing (cold-applied) complying with FS SS-S-200:
 - 1. Composition:
Urethane, with minimum capability of plus or minus 12-1/2 percent.
 - 2. Composition:
Bitumen modified polymer; also complying with ASTM C 920, Type M, Grade P, Class 25, Use T
 - a. Composition:
Bitumen modified urethane.
- B. One-Part Urethane Paving Sealant:
Pourable, chemically curing (cold-applied), bitumen modified urethane; complying with FS SS-S-200.
- C. PVC/Coal-Tar Paving Sealant (ASTM D 3406):
Hot-poured, one-part, polyvinyl chloride/coal tar blend; complying with ASTM D 3406.
- D. Rubber/Asphalt Paving Sealant (ASTM D 3405):
Hot-poured, one-part, rubber/asphalt blend; complying with ASTM D 3405.

2.04 SOLVENT-RELEASE-CURING SEALANTS

- A. Butyl Sealant:
No sag, one part, solvent-release-curing; complying with FS A-A-272, Type III, no staining; paintable.

2.05 LATEX SEALANTS

- A. Acrylic-Latex Emulsion Sealant:
One-part, No sag, mildew-resistant, paintable; complying with ASTM C 834.

2.06 SEALANT BACKERS

- A. Backers- General:
No staining; recommended or approved by sealant manufacturer for specific use.
- B. Backers Rods:
Flexible, nonabsorbent, compressible polyurethane foam either open-cell or non-gassing closed-cell, unless otherwise restricted by sealant manufacturer; preformed to appropriate size and shape.

2.07 MISCELLANEOUS MATERIALS

- A. Primers:
As recommended by sealer manufacturer.
- B. Cleaners:
As recommended by sealer manufacturer and not damaging to substrates.
- C. Masking Tape:
Nonabsorbent, no staining.

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D. Tooling Agents:

Approved by sealant manufacturer; no staining to sealant and substrate.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints for characteristics that may affect sealer performance including configuration and dimensions.

B. Do not begin joint sealer work until unsatisfactory conditions have corrected.

3.02 PREPARATION

A. Cleaning:

Just before starting sealer installation, clean out joints accord with recommendations of sealer manufacturers and as follows:

1. Remove all material that could impair adhesion, including dust, dirt, coatings, paint, oil, and grease.
Exception: Materials tested to show acceptable adhesion and compatibility.
2. Dry out damp and wet substrates thoroughly.
3. Clean M-type and O-type substrates by suitable mechanical or chemical methods.
4. Remove loose particles by vacuuming or by blowing with oil-free compressed air.
5. Concrete: Remove laitance and form-release coatings.
6. Clean A-type and G-type substrates by chemical or other method which will not damage the substrate.
7. Use methods which will not leave residues that will impair adhesion.

B. Priming:

Prime substrates as recommended by sealer manufacturer.

C. Marking Tape:

Use masking tape to keep primers and sealers off of adjacent surfaces which would be damaged by contact or by cleanup. Remove tape as soon as practical.

D. Install fillers where needed to provide proper joint depth or support for sealant backers.

3.03 INSTALLATION

A. Comply with sealer manufacturers' installation instructions and recommendations, except where more restrictive requirements are specified.

B. Gun Applied and Pourable Sealants:

Comply with recommendations of ASTM C 1193.

C. Backers:

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1. Install backers at depth required to result in shape and depth of installed sealant which allows the most joint movement without failure.

- a. Make backers continuous, without gaps, tears, or punctures. Do not stretch or twist backers.

D. Sealants:

Use methods recommended by manufacturer; completely fill the joint; make full contact with bond surfaces; tool no sag sealants to smooth surface eliminating air pockets.

1. Use concave joint shape shown in Figure 5A in ASTM C 1193, where not otherwise indicated.

3.04 PROTECTION AND CLEANING

A. Cleaning surfaces adjacent to joints as work progresses and before sealants set using methods and materials approved by manufacturers of sealers and of surfaces to be cleaned.

B. Protect joint sealers from contamination and damage.

C. Remove and replace damage sealers.

3.05 SCHEDULE OF JOINT SEALERS

A. General:

Unless otherwise indicated, joints around perimeter of frames, where indicated to be sealed, are to be sealed using sealer specified for the substrate to the frame.

B. Exterior Joints for Which No Other Sealer Is Indicated:

1. Use one of the following sealants:
 - a. Medium movement silicone sealant
 - b. One-part no sag urethane sealant
 - c. One-part no sag low-modulus urethane sealant
2. Backer:
Backer rod
3. Joint shape:
Concave joint configuration

C. Interior Joints for Which No Other Sealer Is Indicated:

1. Use one of the following sealants:
 - a. Acrylic-emulsion latex sealant
2. Backer:
Backer rod

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3. Joint shape:
Concave joint Configuration

D. Exterior Joints Well Protected from Weather and Not Subject to Movement.

1. Use one of the following sealants:

- a. Any sealer

2. Backer:
Backer rod.

E. Vehicular Paving Joints, Not Over 1-1/2 Percent Slope.

1. Use one of the following sealants:

- a. Silicone sealant for Use T

- b. Two-part cold-applied urethane paving sealant.

- c. One-part cold-applied urethane paving sealant.

- d. PVC/coal tar paving sealant (ASTM D 3406).

- e. Rubber-asphalt paving sealant (ASTM D 3405).

2. Use bond-breaker tape.

3. Backer: Joint filler specified elsewhere.

F. Interior Floor Joints And Pedestrian Paving Joints, Less than 1-1/2 Percent Slope:

1. Use one of the following sealants:

- a. Two-part pourable polysulfide sealant.

- b. Silicone sealant for Use T.

- c. Two-part pourable urethane sealant.

- d. Two-part no sag urethane sealant for Use T.

- e. One-part pourable urethane sealant.

2. Backer:
Backer rod.

3. Joint shape:
Concave joint configuration.

END OF SECTION

SECTION 09255 – GYPSUM BOARD ASSEMBLIES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Non-load-bearing steel framing members for gypsum board assemblies.
2. Gypsum board assemblies attached to steel framing.
3. Cementitious backer units installed with gypsum board assemblies.

- B. Related Sections:

The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for the following: Wood blocking and grounds.
2. Division 7 Section "Building Insulation" for thermal insulation.
3. Division 7 Section "Fire stopping" for fire stopping systems and fire-resistive-rated joint sealants.
4. Division 9 Section "Tile" for cementitious backer units installed as substrates for ceramic tile.

1.3 DEFINITIONS

- A. Gypsum Board Construction Terminology:

Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics:

For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

- A. General:

Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

- B. Product data for each type of product specified.
- C. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.6 QUALITY ASSURANCE

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A. Fire-Test-Response Characteristics:

Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Single-Source Responsibility for Steel Framing:

Obtain steel framing members for Gypsum board assemblies from a single manufacturer.

C. Single-Source Responsibility for Panel Products:

Obtain each type of Gypsum board and other panel products from a single manufacturer.

D. Single-Source Responsibility for Finishing Materials:

Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack Gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.8 PROJECT CONDITIONS

A. Environmental Conditions, General:

Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with Gypsum board manufacturer's recommendations.

B. Room Temperatures:

For non-adhesive attachment of gypsum board to framing, do not exceed 95 deg F (35 deg C).

C. Ventilation:

Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers:

Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

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1. Steel Framing and Furring:

- a. Alabama Metal Industries Corp.
- b. Consolidated Systems, Inc.
- c. Dale Industries, Inc.
- d. Dietrich Industries, Inc.
- e. Marino Industries Corp.
- f. Gold Bond Building Products Div., National Gypsum Co.
- g. Unimast Inc.

2. Grid Suspension Assemblies:

- a. Chicago Metallic Corp.
- b. National Rolling Mills Co.
- c. USG Interiors, Inc.

3. Gypsum Board and Related Products:

- a. Domtar Gypsum.
- b. Georgia-Pacific Corp.
- c. Gold Bond Building Products Div., National Gypsum Co.

2.2 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS

A. General:

Provide components complying with ASTM C 754 for materials and sizes unless otherwise indicated.

B. Wire for Hangers and Ties:

ASTM A 641, Class 1 zinc coating, soft temper.

C. Hanger Rods:

Mild steel and zinc-coated or protected with rust-inhibitive paint.

D. Flat Hangers:

Mild steel and zinc-coated or protected with rust-inhibitive paint.

E. Angle-Type Hangers:

Angles with legs not less than 7/8 inch wide, formed from 0.0635-inch-thick galvanized steel sheet complying with ASTM A 446 Coating Designation G90, with bolted connections and 5/16-inch-diameter bolts.

F. Channels:

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Cold-rolled steel, 0.05980-inch-minimum thickness of base (uncoated) metal and 7/16-inch-wide flanges, and as follows:

1. Carrying Channels:
2 inches deep, 590 lb per 1000 feet, unless otherwise indicated
2. Carrying Channels:
1-1/2 inch deep, 475 lb per 1000 feet, unless otherwise indicated
3. Furring Channels:
3/4 inch deep, 300 lb per 1000 feet, unless otherwise indicated
4. Finish:
Rust-inhibitive paint, unless otherwise indicated
5. Finish:
G-60 hot-dip galvanized coating per ASTM A 525 for framing for exterior soffits and where indicated

G. Steel Studs for Furring Channels:

ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16-inch minimum lip (return), minimum thickness of base (uncoated) metal and minimum depth as follows:

1. Thickness:
0.0329 inch, unless otherwise indicated
2. Depth:
As indicated
2. Protective Coating:
G40 hot-dip galvanized coating per ASTM A 525

H. Steel Rigid Furring Channels:

ASTM C 645, hat-shaped, depth of 7/8 inch, and minimum thickness of base (uncoated) metal as follows:

1. Thickness:
0.0329 inch, unless otherwise indicated.
2. Protective Coating:
G90 hot-dip galvanized coating per ASTM A 525.

I. Grid Suspension System for Interior Ceilings:

ASTM C 645, manufacturer's standard direct-hung grid suspension system composed of main beams and cross furring members that interlock to form a modular supporting network.

2.3 STEEL FRAMING FOR WALLS AND PARTITIONS

A. General:

Provide steel framing members complying with the following requirements:

1. Component Sizes and Spacing:
As indicated but not less than that required to comply with ASTM C 754 under the following maximum deflection and lateral loading conditions: Maximum Deflection: L/240 at 5 lbf per sq. ft.

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2. Protective Coating:
G40 hot-dip galvanized coating per ASTM A 525.

B. Steel Studs and Runners:

ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16-inch-wide minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:

1. Thickness:
0.0270 inch unless otherwise indicated
2. Thickness:
0.0329 inch where indicated
3. Depth:
3-5/8 inches, unless otherwise indicated
3. Depth:
6 inches where indicated
4. Depth:
2-1/2 inches where indicated
5. Depth:
1-5/8 inch where indicated
6. Depth:
4 inches where indicated

C. Steel Rigid Furring Channels:

ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:

1. Depth:
7/8 inch.
2. Thickness:
0.0329 inch, unless otherwise indicated.

D. Fasteners for Metal Framing:

Provide fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

2.4 GYPSUM BOARD PRODUCTS

A. General:

Provide Gypsum Board of types indicated in maximum lengths available to minimize end-to-end butt joints. Thickness: Provide Gypsum Board in thicknesses indicated or, if not otherwise indicated, in 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.

B. Gypsum Wallboard:

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ASTM C 36 and as follows:

1. Type:
Type X required for all assemblies
2. Type:
Sag-resistant type for ceiling surfaces
3. Edges:
Tapered
4. Thickness:
5/8 inch unless otherwise indicated
5. Available Products:
Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard is indicated include, but are not limited to, the following:
 - a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
 - b. Firestop Type C, Georgia-Pacific Corp.
 - c. Fire-Shield G, Gold Bond Building Products Div., National Gypsum Co.
 - d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
 - e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.

C. Gypsum Backing Board for Multilayer Applications:

ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 36 and as follows:

1. Type:
Type X required for all assemblies
2. Edges:
Square, not tapered; or V-tongue and groove
3. Thickness:
5/8 inch unless otherwise indicated

D. Water-Resistant Gypsum Backing Board:

ASTM C 630 and as follows:

1. Type:
Regular, unless otherwise indicated
2. Type:
Type X where required for fire-resistive-rated assemblies
3. Thickness:
5/8 inch, unless otherwise indicated

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2.5 CEMENTITIOUS BACKER UNITS

A. Provide cementitious backer units complying with ANSI A118.9, of thickness and width indicated below, and in maximum lengths available to minimize end-to-end butt joints. Width: Manufacturer's standard width but not less than 32 inches.

B. Available Products:

Subject to compliance with requirements, cementitious backer units that may be incorporated in the Work include, but are not limited to, the following:

1. DomCrete Cementitious Tile-Backer Board, Domtar Gypsum.
2. Util-A-Crete Concrete Backer Board, FinPan, Inc.
3. Glas-crete Cementitious Backer Board, Glascrete, Inc.
4. Wonder-Board, Glascrete, Inc.
5. DUROCK Interior Cement Board, United States Gypsum Co.

2.6 TRIM ACCESSORIES

A. Accessories for Interior Installation:

Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:

1. Material:

Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:

- a. Sheet steel zinc-coated by hot-dip process.
- b. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.

2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:

- a. Cornerbead on outside corners, unless otherwise indicated
- b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim unless otherwise indicated.
- c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
- d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
- e. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening

2.7 JOINT TREATMENT MATERIALS

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A. General:

Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board:

Paper reinforcing tape, unless otherwise indicated. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of Gypsum Board and joint treatment materials for application indicated.

C. Joint Tape for Cementitious Backer Units:

Polymer-coated, open glass-fiber mesh.

D. Setting-Type Joint Compounds for Gypsum Board:

Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
2. For prefilling gypsum board joints, use formulation recommended by Gypsum Board manufacturer for this purpose.
3. For filling joints and treating fasteners of water-resistant Gypsum backing board behind base for ceramic tile, use formulation recommended by the Gypsum Board manufacturer for this purpose.
4. For topping compound, use sandable formulation.

E. Drying-Type Joint Compounds for Gypsum Board:

Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.

1. Ready-Mixed Formulation:
Factory-mixed product
2. Job-Mixed Formulation:
Powder product for mixing with water at Project site
3. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
4. Topping compound formulated for fill (second) and finish (third) coats
5. All-purpose compound formulated for both taping and topping compounds.

F. Joint Compound for Cementitious Backer Unit:

Material recommended by cementitious backer unit manufacturer.

2.8 ACOUSTICAL SEALANT

A. Latex Acoustical Sealant:

Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834 and the following requirements:

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1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints:

Manufacturer's standard nondrying, non-hardening, non-skinning, non-staining, gun applied, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Available Products:

Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:

1. Acoustical Sealant:

a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.

b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2. Acoustical Sealant for Concealed Joints:

a. BA-98, Pecora Corp.

b. Tremco Acoustical Sealant, Tremco, Inc.

2.9 MISCELLANEOUS MATERIALS

A. General:

Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of Gypsum Board manufacturer.

B. Laminating Adhesive:

Special adhesive or joint compound recommended for laminating Gypsum panels.

C. Spot Grout:

ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.

D. Fastening Adhesive for Wood:

ASTM C 557.

E. Fastening Adhesive for Metal:

Special adhesive recommended for laminating Gypsum panels to steel framing.

F. Steel drill screws complying with ASTM C 1002 for the following applications:

1. Fastening Gypsum Board to steel members less than 0.03 inch thick.

2. Fastening Gypsum Board to wood members.

3. Fastening Gypsum Board to gypsum board.

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- G. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.
- H. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.
- I. Asphalt-Saturated Organic Felt:
ASTM D 226, Type I (No. 15 asphalt felt), unperforated.
- J. Sound Attenuation Blankets:
Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
 - 1. Mineral-Fiber Type:
Fibers manufactured from glass.
- K. Polyethylene Vapor Retarder:
ASTM D 4397, thickness and maximum permeance rating as follows:
 - 1. 4.0 mils, 0.19 perms.
 - 2. 6.0 mils, 0.13 perms.
- L. Vapor Retarder Tape:
Pressure-sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3- EXECUTION

3.1 EXAMINATION

Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Ceiling Anchorages:
Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings. Furnish concrete inserts and other devices indicated to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLING STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in Gypsum Board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer

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or, if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.

- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details shown on Drawings.
 - 1. Where building structure abuts ceiling perimeter or penetrates ceiling.
 - 2. Where partition framing and wall furring abut structure except at floor.
 - 3. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading.
- D. Do not bridge building expansion and control joints with steel framing or furring members. Independently frame both sides of joints with framing or furring members as indicated.

3.4 INSTALLING STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS

A. Suspend ceiling hangers from building structural members and as follows:

- 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
- 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
- 4. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye-screws, or other devices and fasteners that are secure and appropriate for structure as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
- 5. Do not support ceilings directly from permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
- 6. Do not attach hangers to steel deck tabs.
- 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
- 8. Do not connect or suspend steel framing from ducts, pipes or conduit.

B. Sway-brace suspended steel framing with hangers used for support.

C. Install suspended steel framing components in sizes and at spacing indicated but not less than that required by the referenced steel framing installation standard.

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1. Wire Hangers:
0.1620-inch (8-gage) diameter, 4 feet O.C.
2. Carrying Channels (Main Runners):
1-1/2 inch, 4 feet O.C.
3. Rigid Furring Channels (Furring Members):
16 inches O.C.

D. Installation Tolerances:

Install steel framing components for suspended ceilings so that cross-furring members or grid suspension members are level to within 1/8 inch in 12 feet as measured both lengthwise on each member and transversely between parallel members.

E. Wire-tie or clip furring members to main runners and to other structural supports as indicated.

F. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. For exterior soffits, install cross-bracing and additional framing to resist wind uplift according to details on Drawings.

3.5 INSTALLING STEEL FRAMING FOR WALLS AND PARTITIONS

A. Install runners (tracks) at floors, ceilings, and structural walls and columns where Gypsum Board stud assemblies abut other construction. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.

B. Installation Tolerances:

Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing.

C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Cut studs 1/2 inch short of full height. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board. For STC-rated and fire-resistive-rated partitions requiring partitions to extend to the underside of floor/roof slabs and decks or other continuous solid structural surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed, to support gypsum board closures needed to make partitions continuous from floor to underside of solid structure.

D. Terminate partition framing at suspended ceilings where indicated.

E. Install steel studs and furring in sizes and at spacing indicated but not less than that required by the referenced steel framing installation standard to comply with maximum deflection and minimum loading requirements specified.

1. Single Layer Construction:
Space studs at 24 inches O.C.
2. Single and Double-Layer Construction:

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Space studs at 24 inches O.C.

- F. Install steel studs so that flanges point in the same direction and so that leading edges or ends of each gypsum board can be attached to open (unsupported) edges of stud flanges first.
- G. Frame door openings to comply with details indicated, with GA-219, and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- H. Frame openings other than door openings to comply with details indicated or, if not indicated, in same manner as required for door openings. Install framing below sills of openings to match framing required above door heads.
- I. Install thermal insulation as follows:
 - 1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches O.C.
 - 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches O.C.
 - 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with standard width insulation panel and continue in regular manner. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.
 - 4. Until gypsum board is installed, hold insulation in place with 10-inch staples fabricated from 0.0625-inch (16-gage)-diameter tie wire and inserted through slot in web of member.
- J. Install polyethylene vapor retarder where indicated to comply with the following requirements:
 - 1. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with mechanical fasteners or adhesives. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose mineral-fiber insulation.
 - 2. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to framing at top, end, and bottom edges, at perimeter of wall openings, and at lap joints; space fasteners 16 inches O.C.
 - 3. Seal joints in vapor retarders caused by pipes, conduits, electrical boxes and similar items penetrating vapor retarders with vapor retarder tape.
 - 4. Repair any tears or punctures in vapor retarder immediately before concealing it with the installation of gypsum board or other construction.

3.6 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

A. Gypsum Board Application and Finishing Standards:

Install and finish Gypsum panels to comply with ASTM C 840 and GA-216.

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- B. Install sound attenuation blankets where indicated prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At high walls, install panels horizontally with end abutting joints over studs and staggered.
- E. Install Gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- F. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.
- G. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. Attach gypsum panels to framing provided at openings and cutouts.
- I. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors, and doors over 32 inches wide. Apply spot grout at each jamb anchor clip and immediately insert Gypsum panels into frames.
- J. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining Gypsum panels, as well as supporting framing behind Gypsum panels.
- K. Cover both faces of steel stud partition framing with Gypsum panels in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
 - 1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit Gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of roof decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4- to-1/2-inch-wide joints to install sealant.
- L. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments as detailed and required. Provide 1/4-inch wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- M. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, behind control

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and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through Gypsum Board assemblies, including sealing partitions above acoustical ceilings.

- N. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.7 GYPSUM BOARD APPLICATION METHODS

A. Single-Layer Application:

Install Gypsum wallboard panels as follows:

1. On ceilings, apply Gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
3. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.

B. Wall Tile Substrates:

For substrates indicated to receive thin-set ceramic tile and similar rigid applied wall finishes, comply with the following:

1. Install cementitious backer units at showers and where indicated to comply with ANSI A108.11.
2. Install Gypsum wallboard panels with tapered edges taped and finished to produce a flat surface except at showers and other locations indicated to receive water-resistant panels.

C. Double-Layer Application:

Install gypsum backing board for base layers and Gypsum Wallboard for face layers. On partitions/walls, apply base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face layer joints offset at least one stud or furring member with base layer joints. Stagger joints on opposite sides of partitions.

D. Single-Layer Fastening Methods:

Apply gypsum panels to supports as follows:

1. Fasten with screws.

E. Double-Layer Fastening Methods:

Apply base layer of gypsum panels and face layer to base layer as follows:

1. Fasten base layers with screws and face layer with adhesive and supplementary fasteners.

3.8 INSTALLING TRIM ACCESSORIES

A. General:

For trim accessories with back flanges, fasten to framing with the same Fasteners used to fasten gypsum

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board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

B. Install corner beads at external corners.

C. Install edge trim where edge of gypsum panels would otherwise be exposed or semi-exposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.

1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.

2. Install L-bead where edge trims can only be installed after gypsum panels are installed.

3. Install U-bead where indicated.

3.9 FINISHING GYPSUM BOARD ASSEMBLIES

A. General:

Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.

B. Prefill open joints, rounded or beveled edges, and damaged areas using setting type joint compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.

F. Levels of Gypsum Board Finish:

Provide the following levels of gypsum board finish per GA-214:

1. Level 1 for ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies.

2. Level 2 where water-resistant gypsum backing board panels form substrates for tile, and where indicated.

3. Level 3 for gypsum board surfaces indicated to receive medium- or heavy-textured finishes before painting.

4. Level 4 for gypsum board surfaces indicated to receive light-textured finishes, wallcoverings, and flat paints over light textures.

F. For level 4 gypsum board finish, embed tape in finishing compound plus two separate coats applied over joints, angles, fastener heads, and trim accessories using one of the following combinations of joint compounds (not including prefill), and sand between coats and after last coat.

G. Where level 3 gypsum board finish is indicated, apply joint compounds specified for first and second coat in addition to embedding coat.

H. Where level 2 gypsum board finish is indicated, apply joint specified for first coat in addition to embedding coat.

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I. Where level 1 gypsum board finish is indicated, apply joint compound specified for embedding coat.

J. Finish cementitious backer units to comply with unit manufacturer's directions.

3.10 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to Installer that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 09900 – PAINTING

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PART 1 · GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following:

1. Exposed interior items and surfaces.
2. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Owner's Representative will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include the following factory-finished components:

- a. Architectural woodwork and casework.
- b. Elevator equipment.
- c. Finished mechanical and electrical equipment.
- d. Light fixtures.
- e. Distribution cabinets.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

- a. Ceiling plenums.

3. Finished metal surfaces include the following:

- a. Anodized aluminum
- b. Stainless steel
- c. Chromium plate

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d. Copper

e. Bronze and brass

4. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators

b. Linkages

c. Sensing devices

d. Motor and fan shafts

5. Labels:

Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:

1. Division 5 Section "Structural Steel" for shop priming structural steel

2. Division 5 Section "Metal Fabrications" for shop priming ferrous metal

3. Division 6 Section "Interior Architectural Woodwork" for shop priming interior architectural woodwork

4. Division 8 Section "Steel Frames" for shop priming steel doors and frames

5. Division 9 Section "Gypsum Board Assemblies" for surface preparation for gypsum board

1.3 DEFINITIONS

A. General:

Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85- degree meter.

2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.

3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60- degree meter.

4. Semi-gloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60- degree meter.

1.4 SUBMITTALS

SECTION 09900 – PAINTING

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A. Product Data:

For each paint system specified. Include block fillers and primers.

1. Material List:

Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information:

Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.

3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Verification:

Of each color and material to be applied, with texture to simulate actual conditions.

C. Qualification Data:

For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Owner's Representative and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications:

Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in- service performance.

B. Source Limitations:

Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material
2. Product description (generic classification or binder type)
3. Manufacturer's stock number and date of manufacture
4. Contents by volume, for pigment and vehicle constituents
5. Thinning instructions
6. Application instructions
7. Color name and number

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8. VOC content

B. Store materials not in use in tightly covered containers in a well-ventilated area. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are below 90°F (32°C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are below 95°F (35°C).

C. Do not apply paint when the relative humidity exceeds 85 percent; or at temperatures less than 5°F (3°C) above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.

1. Quantity:

Furnish the Owner with a 1-gallon can of each type of finish coat of each color, taken from lots furnished for the work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products:

Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

B. Manufacturers Names:

The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:

1. Devoe & Raynolds Co. (Devoe).
2. Fuller-O'Brien Paints (Fuller).
3. Glidden Co. (The) (Glidden).

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4. Benjamin Moore & Co. (Moore).
5. PPG Industries, Inc. (PPG).
6. Pratt & Lambert, Inc. (P & L).
7. Sherwin-Williams Co. (S-W).
8. Martin Seymour Co. (MS).

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility:

Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality:

Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names:

Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors:

Match colors indicated by reference to manufacturer's color designations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work:

Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Owner's Representative about anticipated problems using the materials specified over substrates primed by others.

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3.2 PREPARATION

A. General:

Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning:

Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation:

Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and re-prime.

2. Ferrous Metals:

Clean un-galvanized ferrous metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

- a. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP 10.
- b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
- c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

3. Galvanized Surfaces:

Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Materials Preparation:

Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

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E. Tinting:

Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General:

Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
7. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
8. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting:

Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer on metal surfaces that have been shop primed and touch up painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

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C. Application Procedures:

Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes:

Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.

2. Rollers:

Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

3. Spray Equipment:

Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness:

Apply paint materials no thinner than manufacturers recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

E. Mechanical and Electrical Work:

Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Piping, pipe hangers, and supports
2. Equipment supports
3. Accessory items

G. Electrical items to be painted include, but are not limited to, the following:

1. Conduit and fittings

H. Prime Coats:

Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes:

Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes:

Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

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L. Completed Work:

Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

A. Cleanup:

At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Owner's Representative.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA Pl.

3.6 EXTERIOR PAINT SCHEDULE

A. Ferrous Metal:

Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Semi-gloss, Acrylic-Enamel Finish:
2 finish coats over a rust-inhibitive primer.

a. Primer:

Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

b. First and Second Coats:

Semi-gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

3.7 INTERIOR PAINT SCHEDULE

A. Gypsum Board:

Provide the following finish systems over interior gypsum board surfaces:

1. Flat Acrylic Finish:
2 finish coats over a primer
2. Primer:

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Latex-based, mildew inhibiting interior primer, such as Kilz2 or approved equal, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

3. Use only thinners approved by paint manufacturer and only within the recommended limits.

B. First and Second Coats:

Flat, acrylic-latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).

C. Ferrous Metal:

Provide the following finish systems over ferrous metal:

1. Semi-gloss, Acrylic-Enamel Finish:

One finish coat over an enamel undercoat and a primer

- a. Primer:

Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

- b. Undercoat:

Alkyd, interior enamel undercoat or semi-gloss, acrylic-latex, interior enamel, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

- c. Finish Coat:

Semi-gloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

D. Zinc-Coated Metal:

Provide the following finish systems over zinc-coated metal:

1. Semi-gloss, Acrylic-Enamel Finish:

2 finish coats over a primer

- a. Primer:

Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

- b. First and Second Coats:

Semi-gloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

E. Tinting:

Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are being applied. Tint undercoats to match the color of the finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

END OF SECTION